



The University of Georgia

College of Agricultural and Environmental Sciences
Cooperative Extension

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Lee County Ag Newsletter

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Planter Considerations for Planting Cotton in Dry Conditions

Similar to the weather conditions we experienced in May of 2019, the extremely hot and dry conditions this week is going to challenge growers to make some difficult planting decisions. Planting in dry conditions without adequate soil moisture in the furrow results in poor or reduced stands which in most cases translates to a significant yield impact. Based on their specific situation, there are couple different strategies that growers may utilize for planting in dry conditions – dusting in cotton and hoping to catch a light rain or planting deeper than normal seeding depths to chase soil moisture. Both of these planting strategies require very careful consideration to planter depth and downforce adjustments as emergence issues due to improper planter setup are usually more common and apparent when planting cotton in less than ideal field conditions. Here are few points to consider based on the research studies conducted at UGA as well as the visual observations made during planting in similar dry field conditions in the past:

Dusting in Cotton: In general, most planters (even brand new) have some seed depth variability among the row-units which is hard to notice when planting cotton at nominal seeding depths (0.5 – 1.0 inch). However, when dusting in cotton or planting at depths shallower than 0.5 inch, these seed depth variations can influence emergence significantly in some cases. The picture below shows an example of the center two rows on a 4-row planter where the seed depth setting on each row-unit was set similarly to plant seed at 0.5-inch deep with no downforce so technically simulating a “dusting in”

scenario. While you can notice a decent cotton stand on the right, there are no emerged plants at all on the left side due to the lack of correct seed depth setting on that particular row-unit even when it was set the same as other row-units. In fact, if you look closely, you can still see the seeds laying the ground (red circles) two weeks after planting. The main point here is that ensuring correct seed depth on every planter row-unit is critical when planting at shallower depths or dusting in cotton and making appropriate adjustments as needed to each row-unit separately as any deviation from target seeding depth in these situations will clearly show up in emergence.



Planting Deeper than 1-inch Seed Depth: Generally, it is not recommended to plant cotton seed deeper than 1-inch as cotton seed requires a lot of energy to germinate and most of its energy reserves can be used (or sometimes depleted) before it emerges out of the soil. When planting cotton seed deeper than 1 inch in dry soil conditions, planter downforce can further impact emergence as a higher downforce can result in both soil compaction around the seedbed and even deeper seed depth than desired, which significantly reduces the likelihood of that seed's emergence. The picture below shows an example of reduced and uneven emergence in both rows when cotton was planted at 1.5-inch seeding depth using a higher downforce of 200 lbs in dry soil conditions and loamy sand. Remember that the exact downforce requirements will vary based on soil type and texture but make sure you are digging behind the planter to

verify if the seed is placed in a firmer seed bed and is not compacted or pushed deeper than the target seeding depth. Based on the in-field assessment, make appropriate downforce adjustments for your soil type and texture to attain desired seed placement.



Planter research studies conducted at the University of Georgia also indicated that the large-seeded cotton varieties tend to perform better than the small-seeded varieties in situations where cotton seed is placed deeper or planted using a higher downforce. Therefore, cotton growers who prefer to plant small-seeded varieties need to be extra careful about planter depth and downforce settings when planting in dry soil conditions.

Irrigation for During Excessive Heat for All Crops (Dr. Wesley Porter)

As we all know we are predicted to have some extremely high temperatures over the next week or so, and are not predicted to receive any rainfall in the “long-term” forecast. I have compiled some recommendations and considerations for our three major crops needing irrigation below.

Corn: On average I would say the corn across the state is around 10 weeks after planting, some is tasseling, some isn't quite there yet. We are knocking on the door of peak corn water usage. We are seeing roots using moisture as deep as 18+ inches on our sensors now. The problem is we cannot

replace moisture this deep with overhead irrigation systems. Here are some thoughts and how I would approach it:

- Apply irrigation amounts of at least 0.3 to 0.5 inches, and don't try to use the irrigation system for a "cooling effect".
 - Amounts less than 0.3 inches are going to have very little effect on soil moisture, and the time it takes to apply these small amounts really isn't going to benefit the entire field for cooling, so I strongly suggest based on the time it takes your system to apply it, applying around the 0.5-0.75 inch range every 2-4 days. This will replenish shallow soil moisture, provide the crop with moisture in the root zone and let it transpire and self-regulate its own temperature.
- Now is not the time to fall behind on corn irrigation. With most of our corn moving into peak water usage some systems may need to run almost continually over the next few weeks. Just keep this in mind, if we deplete our deep soil moisture now we will struggle to replenish it without a good soaking rainfall.

Cotton: Most of our cotton is very young and in the stage of not requiring much if any water. Camp Hand, John Snider and I have discussed this and here is what we are currently recommending:

- Temperatures higher than 95 degrees can negatively impact growth and development (see previous Cotton team newsletter).
 - In extremely hot environments it is recommended that growers apply a light irrigation event to help cool the crop.
 - However, similar to corn, very low irrigation applications, most likely won't be much help, so we are recommending that you apply two 0.3 to 0.5 inch events per week.
 - This amount is low enough not to saturate the soil but high enough to ensure that the root zone will have moisture.
- Also keep in mind some of the issues that have already been shared by Camp and Stanley about herbicides and planting into hot dry soil conditions:
 - Planting into moisture is key. When planting into moisture, seeding depth wasn't as important concerning herbicide injury. However, when planting into dry soil, cotton planted 0.7" deep noted 17% higher visual injury from PRE-applied herbicides than cotton planted 0.35" deep.
 - Soil temperature greatly influences cotton germination and root growth. Normal lateral root growth can occur at soil temperatures of 93 F, but soil temperatures above 104 F can severely limit root growth. Next week, soil surface temps could easily get upwards of 115 F. Anything that could be done to reduce soil temps/retain soil moisture could be beneficial with respect to planting and establishing a stand.
- Fields can be pre-watered to help with some of these problems but don't over apply irrigation, usually 0.5" is a sufficient amount prior to planting.
- Avoid planting dryland fields if at all possible over the next few days to week.

Peanuts: Very similar to cotton, most of our peanuts are just being planted or are very young and the water use is very low.

- The recommendation is to apply around 0.3 to 0.5 inches twice a week until we cool down.

- Fields can be pre-watered to help with some of these problems but don't over apply irrigation, usually 0.5" is a sufficient amount prior to planting.
- Keep in mind Eric Prostko's post about the potential for Valor injury and irrigation ([UGA Weed Science Blog - Field Crops and Vegetables](#)).
 - These low amounts of irrigation should not cause injury, especially in the current conditions as it is better to get an adequate stand.

Cotton Planting (Camp Hand, Cotton Specialist)

Relative to cotton planting, **I do not believe it is time to press the panic button yet!** Yes, this week is going to be hot and less than ideal, but once we get to the end of this week and into next week, temperatures will be better for planting with less risk of dealing with these high soil temperatures we will certainly see this week.

Yes, larger seeded varieties and planting deeper could help growers try to get a stand **if they can't wait a few days**. However, I believe it would be beneficial to wait until the end of this week to get a better picture of our rain chances with this cold front that is supposed to be coming in. Even in an irrigated situation, I would feel much better about waiting until the end of this week to plant just because of the adverse effects we have observed from extremely high soil temperatures on cotton germination, growth, and development.

Planting should be avoided in situations where cooler, moist soils can't be maintained this week (i.e. dryland fields). Planting into a cover crop or behind wheat with good soil moisture could help get a decent stand if growers **must** plant this week. Cover crops have a demonstrated ability to retain moisture and cool soil surface temperatures, which could be beneficial in times like this. In late May 2019 we planted cotton into a cover crop and saw much better stand establishment than conventional tillage planted at the same time – **BUT** stand was still reduced when compared to earlier planted cotton.

None of us want a repeat of what happened in 2019, so be aware of the risks of planting in the next few days. Bottom line, if you could wait until Thursday/Friday to get going again, I think it would be beneficial.

Glyphosate Residual Activity Impacts Vegetable Transplants (Stanley Culpepper)

Over the past several years, we have been discussing how glyphosate applied pre-transplant to vegetables can be problematic depending on rate applied, time interval between application and transplanting, and rainfall amount between application and transplanting. A current graduate student's project further stresses the importance of understanding this challenge (photos below) and the importance of following our new label (below) when transplanting into bare-ground or mulch production systems.



**No Roundup
Pretransplant**



**Roundup PMAX II 64 oz/A
Pretransplant 1 day**



**Roundup PMAX II 128 oz/A
Pretransplant 1 day**

MONSANTO COMPANY
800 N. LINDBERGH BLVD.
ST. LOUIS, MISSOURI 63167 USA

Roundup PowerMAX® II Herbicide

Recommendations Prior to Transplanting Cucurbits and Fruiting Vegetables in Sandy Soils

EPA Reg. No. 524-537

FIFRA 2(ee) Recommendation

FOR DISTRIBUTION AND USE ONLY IN THE STATES OF ALABAMA, FLORIDA AND GEORGIA

FIFRA Section 2(ee) Recommendation: This recommendation is made as permitted under FIFRA Section 2(ee) and has not been submitted to or accepted by the U.S. Environmental Protection Agency. This product bulletin is not product labeling, but is issued to clearly describe use recommendations as permitted under FIFRA Section 2(ee). Always read and follow label directions. The applicable labeling for this product must be in the possession of the user at the time of application.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling.

Read the product labeling affixed to the container of Roundup PowerMAX II Herbicide before applying. Use of Roundup PowerMAX II Herbicide according to this product bulletin is subject to the use precautions and limitations imposed by the labeling affixed to the container.

CROPS: Cantaloupe, Casaba melon, Crenshaw melon, Cucumber, Gherkin, Gourds, Honeydew melon, Honey ball melon, Mango melon, Melons (all), Muskmelon, Persian melon, Pumpkin, Squash (summer, winter), Watermelon, Eggplant, Groundcherry, Okra, Pepino, Pepper (includes bell pepper, chili pepper, cooking pepper, pimiento, sweet pepper), Tomatillo, Tomato.

When applying Roundup PowerMAX II Herbicide prior to transplanting these crops in bare ground production soil with over 85% sand and/or less than 0.5% organic matter, if the soil is not tilled after application and before planting, apply no more than 32 fluid ounces of this product per acre in a single application, and allow for a minimum accumulation of 0.5 inch of rainfall or overhead irrigation and wait 7 or more days between application and transplanting. Make no more than 1 application of this product within 2 weeks before transplanting.

When applying Roundup PowerMAX II Herbicide prior to transplanting these crops in mulch production where soil is over 85% sand and/or less than 0.5% organic matter, wait 3 or more days before transplanting following a single application of this product up to 32 fluid ounces per acre, or wait 10 or more days following a single application between 32 and 64 fluid ounces per acre, AND allow for a single rainfall or irrigation event of at least 0.5 inch between application of this product at any rate and transplanting. Punch new transplant holes and place plants a minimum of 3 inches from old holes or torn mulch.

Single Application Rate of Roundup PowerMAX II Herbicide	Interval Between Application and Transplanting	Rainfall/Irrigation Before Transplanting
Up to 32 fluid ounces	3 or more days before transplanting	0.5 inch or more
32 to 64 fluid ounces	10 or more days before transplanting	0.5 inch or more

For product information or assistance using this product, call toll-free 800-332-3111.
In case of an emergency involving this product, call collect, day or night, 314-694-4000.

Roundup PowerMAX is a registered trademark of Monsanto Technology LLC.

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1/27/2020

63045U2-13

For a better copy of this new label:

https://s3-us-west-1.amazonaws.com/agrian-cg-fs1-production/pdfs/Roundup_PowerMAX_II2t_Herbicide_2EE.pdf

Strongarm Carryover from Peanuts to Field Corn (Eric Prostko)

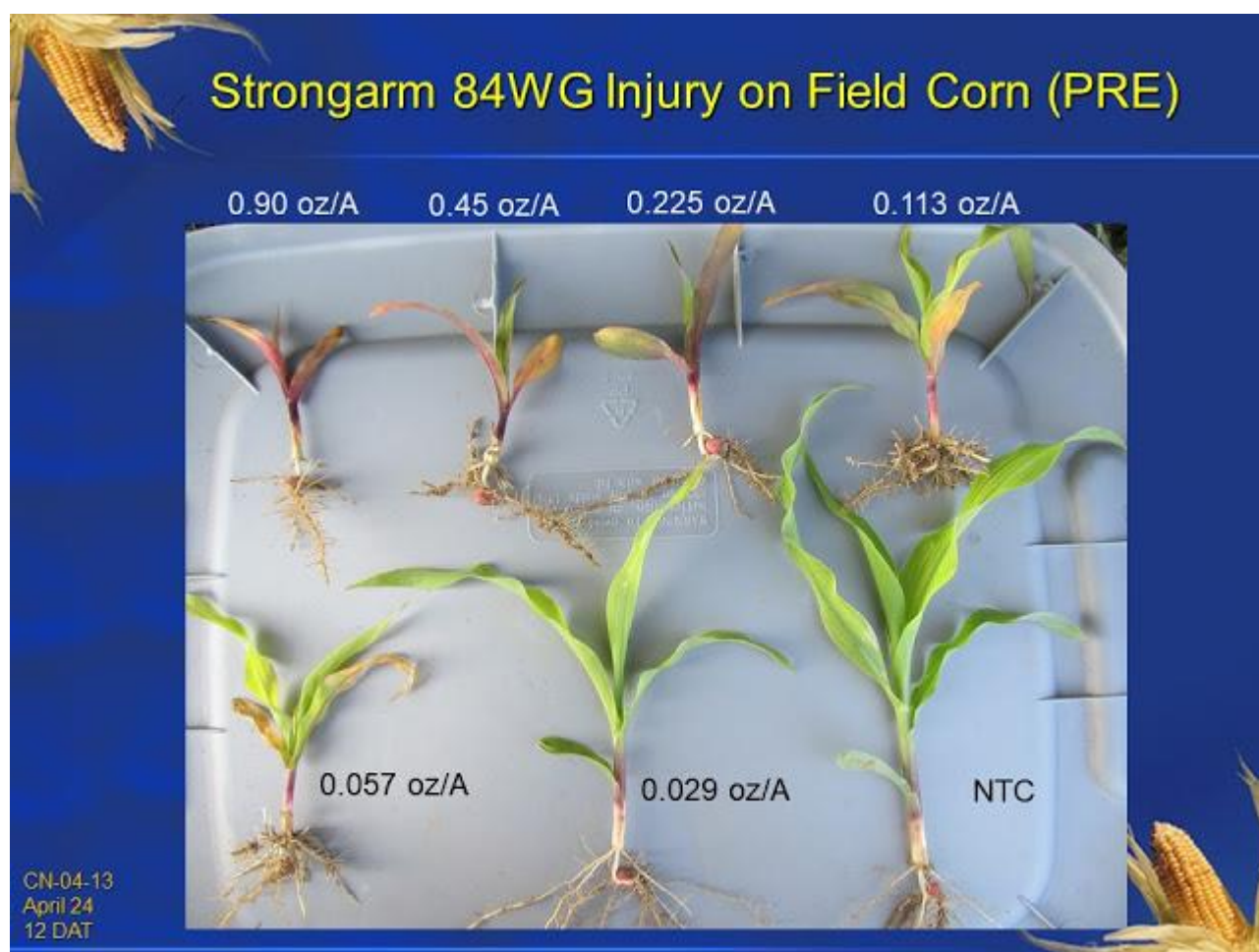
The 2021 field corn production season has not been great. Cold, cloudy, wet weather has many farmers scratching their heads about the way some of their fields look. There are many possible causes of these

problems (i.e. fertility, disease, insects, nematodes, weather, herbicide carryover, etc.). My colleagues and I have tried to address these issues as needed. With that in mind, I would like to give you my thoughts on the potential for Strongarm (diclosulam), applied to peanuts in 2020, to have carried over to field corn in 2021.

1) In general, I am of the opinion that the potential for herbicide carryover (assuming 1X rates were applied) for many herbicides in Georgia is low. Why? We have warm temperatures, lighter/low OM soils, abundant rainfall, and soils that never freeze (maybe in extreme North Georgia). These are conditions that are very favorable for the microbial degradation of herbicides (the major breakdown method for most herbicides).

2) The labeled rotation restriction for field corn following an application of Strongarm is **18 months**. Consequently, any grower/consultant/county agent who actually reads the label might automatically assume that this could be the cause of many field corn problems. But, there is more to this story.

3) What does Strongarm injury to field corn look like? See the pictures below. These are from research trials that I conducted in 2013/2014 where I applied various rates of Strongarm to irrigated field corn immediately after planting (i.e. PRE). Remember that the labeled rate of Strongarm is 0.45 oz/A.



Strongarm 84WG Injury on Field Corn (PRE)

0.90 oz/A

0.45 oz/A

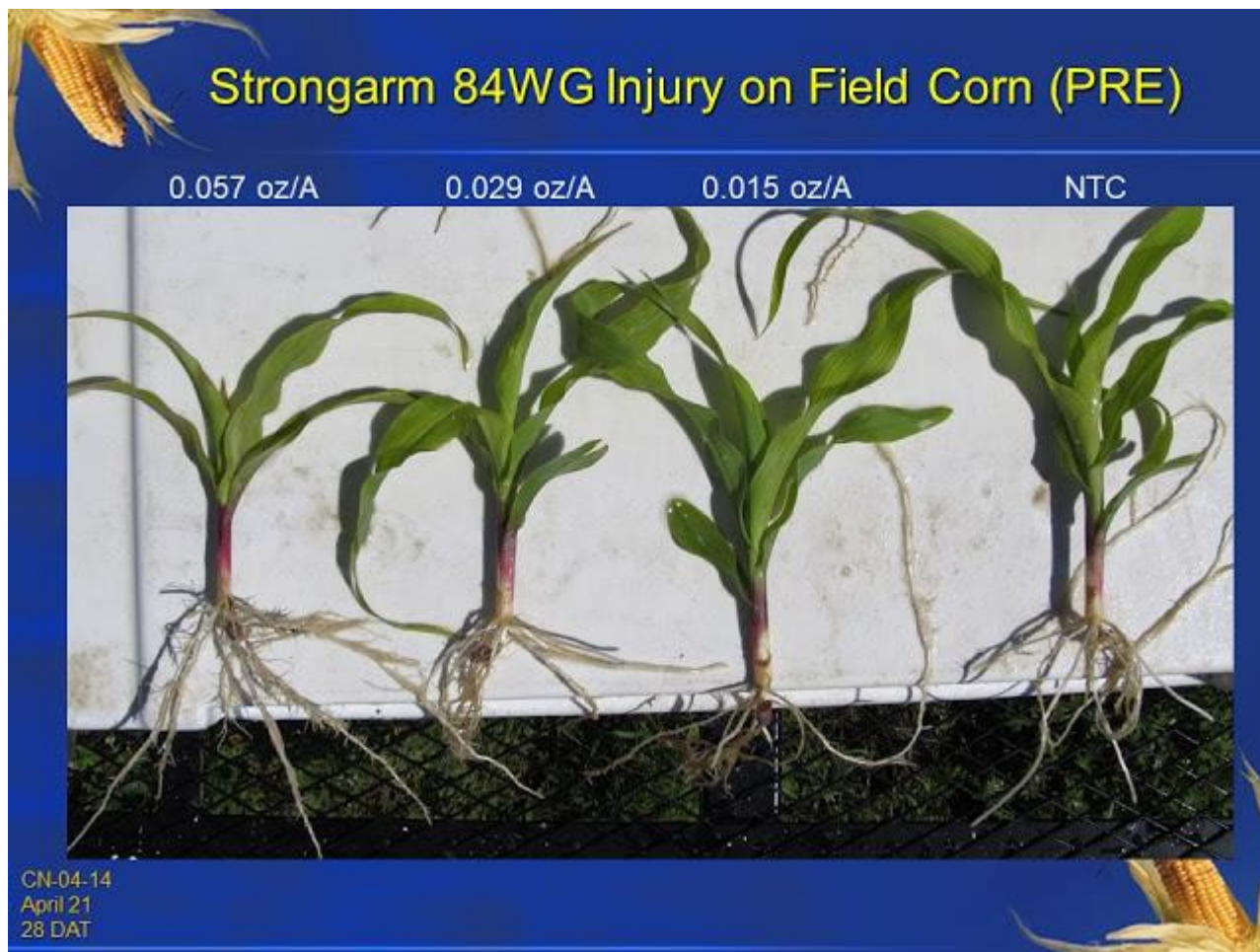
0.225 oz/A

0.113 oz/A

NTC



CN-04-14
April 21
28 DAT



4) The NOEL (no effect level) for Strongarm's influence on field corn yield (based upon 3 years of irrigated field trials in south Georgia) is 0.029 oz/A (1/16X rate).

5) The greatest/longest reported half-life for Strongarm is **43 days** (range of 13-43 days). Thus, based upon our data, it would take 172 days or 5.7 months for the 0.45 oz/a rate to breakdown to this 0.029 oz/A rate. So, field corn planted after that time period would be unlikely to be affected by Strongarm carryover (**in irrigated fields and normal weather patterns**).

6) A few other random thoughts:

- a) Sweet corn is way more sensitive to Strongarm than field corn.
- b) PRE applications of Strongarm would be more likely to carryover than POST applications (i.e. more herbicide reaches the soil).
- c) Much of the Strongarm used in Georgia peanuts is applied at reduced rates. Many growers who use Strongarm PRE only apply 0.225 oz/A. Many growers who apply Strongarm POST only use 0.30 oz/A.
- d) The potential for Strongarm carryover would be greater in dryland fields vs. irrigated fields.

7) I will never say never but it is my opinion that Strongarm applied at 0.45 oz/A or less to irrigated peanuts is unlikely to cause carryover problems in irrigated field corn planted more than 6 months (7+ months even safer) after application. But, it is never a good idea to use Strongarm in dryland peanut fields that will be rotated to dryland field corn and never a good idea to use Strongarm in any peanut field (dryland/irrigated) rotated to sweet corn.

8) The label is the law so growers who choose to plant field corn earlier than 18 months after an application of Strongarm do so at their own risk. It is not very likely that Corteva would ever change the current Strongarm field corn rotation restrictions based upon previous UGA test results.

9) Soil/tissue tests for pH/fertility problems and a nematode test are always very helpful when diagnosing field problems since these types of problems can look very similar to herbicide injury.

Mixing Order of Pesticides is Important (Eric Prostko)

This is a friendly reminder that the tank-mixing order/sequence of pesticides is very important. I discussed this topic in a previous UGA Weed Science Blog (***Tank-Mixing - April 4, 2018***) so check that one out so I do not have to reinvent the wheel.

Got a call from a industry tech rep today about some mixing problems with Roundup PowerMax3 and Zidua SC. You can see in the slide below that when the Roundup was put in the plastic bottle first followed by the Zidua, that some problems (*i.e. the formation of precipitates that could gum up a sprayer*) occurred immediately but did not do so when the Zidua was mixed in the bottle first. This simple demonstration was conducted using 1500 mls of water (0.396 gallons) so just imagine the potential mess in an 800 gallon sprayer. This problem could have been easily avoided by reading page 13 of the Zidua SC label (https://s3-us-west-1.amazonaws.com/agrian-cg-fs1-production/pdfs/ZiduaR_SC1t_herbicide_Label.pdf).



Wrong Mixing Order

10 GPA, Roundup PowerMax3 @ 32 oz/A + Zidua SC @ 2 oz/A



Roundup PMAX3 then Zidua



Zidua then Roundup PMAX3

05/11/21

Why Does UGA Only Recommend Dual Magnum in Cantaloupe and Watermelon Row Middles? (Stanley Culpepper)

It has been asked “What will happen to my melons if Dual Magnum is applied broadcast prior to transplanting or broadcast overtop after transplanting”? Figures 1 and 2 will help you understand why we need to avoid these application methods and focus on using Dual Magnum only in our row middles!

Fig 1. Impact of Dual Magnum applied before transplanting cantaloupe.



No Dual Magnum



Dual Magnum Prior To Transplant

Fig 2. Impact of Dual Magnum applied ovetop of watermelons.



Check

**Dual Magnum
right after
transplant**



Check

**Dual Magnum
2 weeks after
transplant**

Herbicides and Dusting in Cotton Can Be a Mighty Challenge! (Stanley Culpepper)

The most effective approach to minimize cotton injury from preemergence (PRE) herbicides is to place the cotton seed in moist soil where it can imbibe (absorb) clean water free of herbicides (Figure 1). Next, we need our cotton roots to “out run” the herbicide as the herbicide is moving down into the soil with rainfall or irrigation. When placing cotton seed in dry soil and then applying a PRE herbicide, it is likely impossible for water to get to the seed without being contaminated with the herbicide causing much greater potential for injury.

Thus, dusting cotton in and applying PRE herbicides is far from ideal in regards to avoiding cotton injury. The next thought from every grower, is to hold off on the herbicides until the cotton emerges. This thought is extremely dangerous when considering the monumental challenges our family farms face with herbicide resistance in Palmer amaranth. However, it may be the only option in some environments. If one does follow the path of not using PRE herbicides and planting cotton into dry soils, there are several key points to consider.

First, there needs to be no weeds emerged (especially Palmer) when the cotton seed is placed in dry soil. If there is, get the backhoe out to dig the Palmer up later in the year. In theory, if the field is weed-free when dusting cotton in the soil then no additional weeds should emerge until it rains.

Second, the first postemergence herbicide application should occur as soon as the cotton is fully emerged; the treatment must kill emerged weeds and must include residual herbicides. The level of selection pressure placed on the postemergence herbicide in this situation is very high and not sustainable over time.

Third, a second postemergence herbicide application should be made 12 to 15 days later and again include a residual product, this timing assumes you were timely with the first postemergence application. If you were not timely, the interval needs to be tightened down following label recommendations.

And finally, the value of a layby application in fields without a PRE increases astronomically in regards to herbicide sustainability. Although it is very time consuming, it is still better than hand-pulling pigweed!

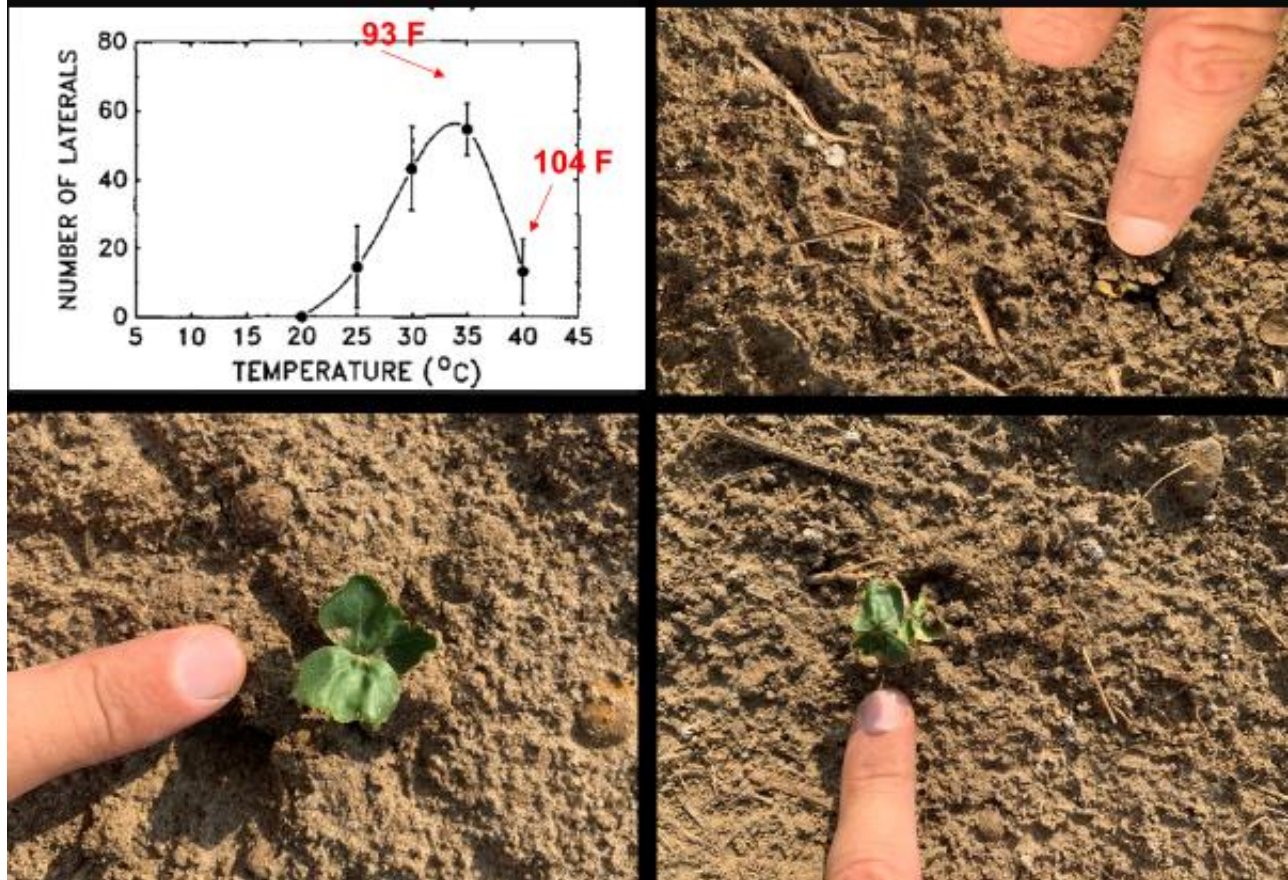
Figure 1. Percent cotton injury as influenced by seed depth and soil moisture at planting.



Heat or Herbicides? (Stanley Culpepper)

Next week (this week) is shaping up to be a challenging week for cotton planting, similar to late May of 2019. Remember that soil temperatures greatly influence cotton emergence, Figure 1 includes a graph from a USDA manuscript sharing the relationship of lateral cotton root development as influenced by soil temperature (McMichael and Burke, Environmental and Experimental Botany, Vol 34, I added the F temperatures to their graph). Take special note the highest soil temperature that they studied was 104 F; next week we could easily exceed 115 F if predicted air temperature and lack of cloud predictions are accurate. Back in 2019, most blamed herbicides for the lack in cotton stand when in fact most issues were a result of high soil temperatures. Thus, Figure 1 also shares different levels of visual symptoms of cotton damage from hot soils (pictures from no-herbicide control plots). Any factor cooling soils may have a positive influence. For example, one of Dr. Camp Hand's graduate projects conducted during late May of 2019 noted 35% better stands with a rye cover crop compared to tilled systems; although stand was reduced in both systems.

Figure 1. Influence of soil temp on cotton emerging.



Irrigating Peanut Fields Treated with Valor (Flumioxazin) During a Hot/Dry Period
(Eric Prostko)

The weather forecast for Tifton and many other areas of south Georgia over the next 10 days is not great (> 85 F and < 35% chance of rain). Consequently, growers are wondering if it is a good or bad idea to irrigate cracking peanuts that received a PRE application of Valor. Growers are very conscious of the fact that the potential for Valor injury significantly increases with moisture especially around the time of peanut emergence.

I am of the opinion (*based upon 20+ years of research/field experience with Valor*) that if a grower needs to irrigate a Valor treated peanut field in order to get a good stand, he/she should do so. What is worse? A crappy peanut stand or Valor injury? The impacts from a poor stand are more detrimental than Valor injury. Production/history/research over the last 20 years has confirmed this. Also, an irrigation event of 0.3"-0.5" over several hours is not the same as a 2" rain in 20 minutes!

I recently completed a 3 year study where the main goal was to try and injure the peanut crop by subjecting the field to as much irrigation/rainfall as possible. In these studies, the peanuts received anywhere from 7.8

to 11.2 inches of rainfall/irrigation in the first 30 days after planting (Table 1). Yes, the peanuts did suffer from Valor injury (*as expected*) but they recovered without yield loss even at a 2X rate (Table 2). UGA does not recommend the use of 6 oz/A of Valor (*also not labeled*) but this high rate was used to demonstrate peanut tolerance and simulate worse case scenarios.

I have addressed the Valor/peanut injury issue in numerous other blogs so check those out for more information/injury pictures/etc. (May 20, 2014; May 4 and 27, 2017; May 6, 2019; May 21, 2020).

Table 1. Rainfall/irrigation data (in) for first 30 days after planting for Valor/Dual Magnum high moisture peanut tests in Georgia (2017-2019).

Time (DAP ^a)	2017			2018			2019		
	Rain	Irrigation	Total	Rain	Irrigation	Total	Rain	Irrigation	Total
0-7	0.5	3.7	4.2	0.0	5.3	5.3	0.2	3.0	3.2
8-14	0.4	0.0	0.4	1.1	0.0	1.1	1.2	2.3	3.5
15-21	1.2	0.5	1.7	1.5	0.0	1.5	0.6	0.5	1.1
22-30	0.5	1.0	1.5	3.3	0.0	3.3	0.0	0.5	0.5
Total	2.6	5.2	7.8	5.9	5.3	11.2	2.0	6.3	8.3

^aDAP = days after planting.

Table 2. The influence of Valor on peanut injury, J-rooting, and yield under high moisture conditions in Georgia (2017-2019)^a.

Valor Rate oz/A	Peanut Injury (%)		Peanut J-Rooting	Yield lbs/A
	10 DAT ^b	50 DAT	% ^c	
0	14 c ^d	8 b	46 a	5842 a
3	31 b	9 b	48 a	5870 a
6	51 a	16 a	50 a	5823 a

^aAveraged over three years (2017, 2018, and 2019) and four Dual Magnum rates (0, 16, 21, and 42 oz/A).

^bDAT = days after treatment.

^cData collected 21 days after planting.

^dMeans in the same column with the same letter are not significantly different according to Tukey-Kramer method ($P < 0.10$).

Notes on Planting Peanuts Under Current Conditions (Dr. Scott Monfort)

I wanted to add a few comments on the extreme temperatures expected in Georgia and planting dryland. I would caution growers on chasing moisture this week. A majority of the non-irrigated fields are losing moisture quickly and planting in subpar conditions will likely result in reduced stands. For irrigated fields, growers need to consider irrigated ahead and then again after planting to make sure seed have enough moisture to germinate and emerge. Remember not to plant peanuts in dry hot soil and water after planting. This could shock the peanut seed causing erratic emergence over a 1 to 2 week period.

UGA Beginner's Pecan Course To Be Held June 15, 2021 (Lenny Wells)



Good news! The University of Georgia Pecan Team will be holding its Beginner's Pecan Course on June 15, 2021 in-person at the UGA Tifton Campus Conference Center in Tifton, Georgia. This course is held every other year and covers all you need to know about pecan production including production costs, cultivar selection, fertilization, irrigation, cultural management, insect, disease, and weed control, equipment, and market overview. The event is a day long course from 8:30 am-4:00 pm with morning and afternoon refreshment breaks and lunch served on-site sponsored by Savage Equipment.

Pesticide credits will be available. Click on the link [here](#) to register. Please pre-register at the website so that we can get a head count for the meal. There is a registration fee to offset the cost of the program. There is no charge for county agent registration.

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