

Dates to Remember

Thursday, October 4 – Sunday,
October 15

Georgia National Fair
Perry, GA

Tuesday, October 16 –
Thursday, October 18
Sunbelt Ag Expo
Moultrie, GA

Webster County Fall Carnival
Saturday, October 20
Preston, GA
6 pm

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Peanut Maturity and Blasting

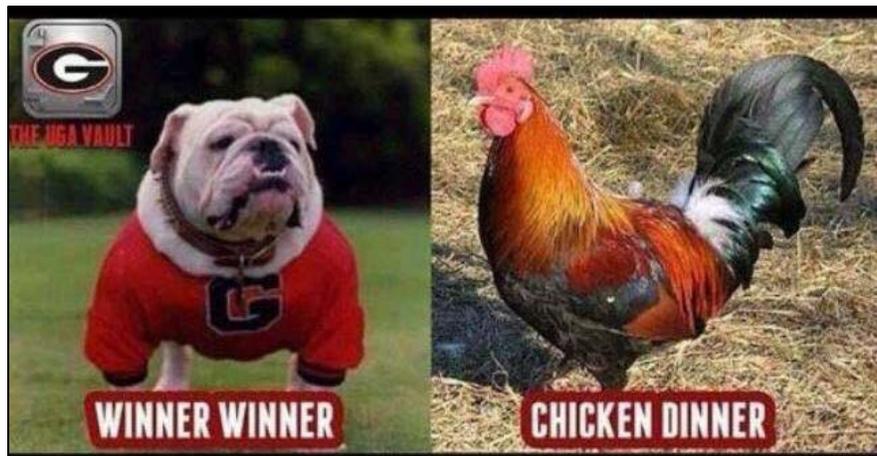
By Dr. Laura Griffeth, County Extension Agent

Every day is Peanut Blasting Day! Just call and let me know you need some checked. I'm not limiting you to certain days and times. I know how valuable your time is, so its's easier for me to work around your schedules as farmers.

However, I do want you to be aware of my schedule. I will be in Preston most of the rest of September. I will be visiting a fellow county agent in Pennsylvania and attending the Penn State – Ohio State Whiteout football game on Thursday, September 27 and Friday, September 28. I'll be out a few days here and there in October but again can work around your schedule. I will be at the Sunbelt Ag Expo all 3 days that week.

Below is a refresher on the sampling procedure necessary when blasting peanuts.

Carefully lift at least 5 plants from a minimum of three representative areas in a field to get the sample. **DIG IN THE AREA WHERE THE PLANTS WERE LIFTED AND CHECK FOR ANY PEANUTS THAT COME OFF.** If you find some older mature pods in the soil, bring these with the sample. The projected digging date is only as accurate as the sample used to represent the field. Once the plants are collected in the field, select individual plants and pick off all nuts on each plant until there are approximately 200 to 220 nuts for the actual hull scrape sample. This sample will be pressure blasted and checked on the peanut maturity profile board. This process has proven to be an effective and reliable method to project up to two weeks in advance the optimum digging date for peanuts.



I definitely enjoyed my time in Columbia last Saturday.

The Ten Commandments of Harvest Time

By: Kristen Traugh, Growing America

Posted: August 16, 2018

To say that harvest time is stressful is an understatement. Quite literally everything you have done that year leads up to a few pivotal weeks. Sometimes this leaves us with questions: should I have spent extra money for another treatment? Would we have reached our yield goal with one more rain? Despite all the “should’ve” and “could’ve” moments, we are thankful for what we have. Here are a few rules to make sure your harvest goes smoothly, hopefully without those big bundles of stalks that make the combine shudder and shake.

1 - Thou shalt not go to the field without preparing yourself and the combine. This means Windex, newspaper, Gatorade, notebooks, a moisture checker, cutlery, phone charger, assorted wrenches (Don't bother getting them all if you can't find them; you'll never have the right one), Band-Aids and grease.

2 - If thou bring thou offspring to ride, please bring additional snacks for everyone. There is nothing more agonizing than hearing a kid munch on Goldfish crackers and fruit roll-ups (the good kind) while listening to a stomach growl and sipping on warm Coca-Cola.

3 - Thou shalt do whatever it takes to finish repairs by lunch of the following day. While hard to follow sometimes, this is an admirable goal. During the carinata harvest this year, my darling brother's combine “Della” (throwback to Jerry Clower) threw a harmonic balancer into oblivion. The closest replacement was in Illinois and \$600 away. Nonetheless, we trekked through the farm graveyard, found a similar combine, and stole that harmonic balancer. It was a tedious repair, but with the help of some mechanic friends and some burritos, Caleb had her running the next evening.

4 - If thou choose to post on social media, thou shalt also state the yield. If you don't, Cole Slaw will comment and make you cough-up that yield. Most know the yield monitor tricks and can usually get a good idea of what the crop looks like from a video. We get it. If the corn is shelling about 170 bushels, we know it is about 240 bushels.

5 - Thou shalt not expect work to be over at dark. Farming was never a 9 to 5 occupation which is painfully evident at harvest. We push combines and wagons until the dew gets too heavy. During peanut season last year, one local restaurant stayed open a little later for farmers to grab a quick bite. This was the best marketing scheme in history. The wide parking lot that you could turn a trailer around in helped too.

6 - Thou shalt always take note of wind direction. Dry crops can be quite flammable and a fire happens quickly without much prompting. Make sure to keep fire extinguishers on hand as well as cold drinks for any firefighters who might see your smoke signal.

7 - Thou shalt not covet the neighbors' new picker or combine. You may take some good-natured ribbing if you run equipment that is a different color. We all have the same thing in mind; some of us just have larger equipment payments than others.

8 - Thou shalt fully appreciate the grain cart drivers. I think most of us have seen the “So God made a grain cart driver” piece on the internet. From running over the skips so it looks like a clean field, to taking the blame for just about everything, grain cart drivers are an integral part of these farms.

9 - Thou shalt not stop the picker except for funerals and football. If mama is having a baby, well, she's on her own. This advice comes straight from our local farmer and mechanic extraordinaire, Randy. You better check the radio for the football game first.

10 - Thou shalt never stop planning for next year. In a world of negativity and uncertainty, we, the farmers are still the eternal optimists. We see the learning experiences in that boggy section of the east field or the rusted-out header repaired with Gorilla Tape (three years and counting). We seek to improve ourselves, our land, our legacies. That's who we are.

So, as we head to the field this year, let's all be safe and enjoy the harvest so we can do it all again next year. Remember the little ones like to ride too!

September 2018 Peanut Pointers

Weather and climate outlook for the rest of 2018

by Pam Knox, Agricultural Climatologist

Now that we are at the peak of hurricane season, I thought you might like a look at what we can expect for weather the next few weeks and on into the winter. We are currently under the influence of a strong high pressure area, which is bringing sunny skies and lower humidity to the area. This has helped steer Tropical Storm Gordon to the west of our area, keeping us fairly dry. The high pressure should erode somewhat over the next week, leading to rainier conditions as moisture from the Gulf of Mexico helps spur the development of some daily thunderstorms. A cold front to our north should bring in additional moisture and stormy conditions.

By mid-September, a return to drier conditions is expected. This should last for most of the next few weeks, which is pretty typical for early fall. Of course we will still see some rain, but I don't see a big wet pattern developing anytime soon.

The big wildcard in this discussion is the tropics. July and August were notably almost free of tropical activity, but the tropics now have woken up and while Gordon is mostly out of our way, Hurricane Florence is churning away in the Atlantic and there are at least two other systems coming off of Africa which are likely to develop into Helene and Isaac later this week. All of them are too far away to affect us anytime soon, but at least some model runs are suggesting that Florence could come close enough to the US to cause some problems, although that will be more of an issue for the Carolina coast and points north than for Georgia. But keep in mind that it only takes one storm hitting your property to cause a lot of damage, so keep an eye on the weather forecasts and be prepared well ahead in case something does come your way. And we are still just halfway through the Atlantic tropical season so we are not out of the woods yet.

Longer term, the El Niño that was expected to develop in the Eastern Pacific Ocean is coming along nicely, and we are in a watch for a full-blown one to occur later this fall. Typically, in an El Niño, the subtropical jet stream parks over southern Georgia and Alabama and northern Florida, keeping skies cloudy, daytime temperatures cool, and bringing extra rain to the region. In northern Georgia and Alabama, the signal is much less strong, and sometimes the climate there can be very different than what is happening along the main storm track, so we will have to see what is happening to our north to figure out what might happen in the northern areas. Fortunately, in El Niño years we don't have a lot of Arctic outbreaks, so frigid temperatures may not be a big issue this winter going into spring. The moisture from the winter rain also keeps the chance of a drought next year lower.

Here are a couple of web sites I use to look for upcoming weather.

<https://www.tropicaltidbits.com/analysis/models> shows the weather forecast for up to two weeks. I use the GFS Global model and look at the weather patterns plus the accumulated precipitation. If the current model is not finished loading yet, you can pick an earlier version of the model using the date at top right. Keep in mind that the models don't get everything right, especially more than 7 days out, so you will see some changes as you look from one day to the next.

<http://www.cpc.noaa.gov/> shows climate patterns for 6-10 days, 8-14 days, and 3-4 weeks. These predictions are based on the GFS and other computer models and give general guidance for what to expect climatologically over those time periods, but don't provide actual weather information.

Hope that all your harvesting is going well and the rest of the season treats you well.

September Peanut Pointers

Scott Monfort

Harvest time is upon us. There has been a few acres of peanut dug across the state. Most of which are the April planted peanuts. Some fields are being dug early trying reduce potential losses due elevated levels of white mold, Leafspot, and TSWV present. I would encourage you to be walking the fields to make sure they are not missing a potential problem.

Along with diseases issues, there are a few other things for your growers related to maturity.

- **Try to get growers to check the maturity of all of their fields this year instead of just the first few to get them started.**
- **Harvesting based on date only** – Georgia growers had a very hard time getting the crop planted on time this year. Some of these acres were planted in some tough conditions (cold, very wet, etc). Maturity checks of the April planted acres have shown some variability in maturity ranges from **on time** (140 Days old) to 150 Plus. Like I mentioned above, there has also been some fields that are being harvested 10 days early to disease.
- **Be aware of areas of the field that were extremely wet for prolonged periods of time** – There are fields all over Georgia where prolonged wet periods caused peanut to turn yellow. These areas never seem to green back up even after the rains have diminished. This is largely due to a significant decline in root viability or decline. For the most part, the roots and in some cases pods are rotten. Growers need to try to exclude these areas (if they are bad) instead of mixing with the good quality peanuts in the field. **This does not mean every yellow area will have bad peanuts --- Growers will need to make that distinction as they are dug.** The areas I am talking about are the low lying areas. I am not talking about the normal late season yellowing of the crop.



Photo from Joe Slusher – Ware County

- **Root crop** -- So far, a majority of the early peanut have more of a root crop with only a very few being produced on the limbs. This could also speed maturity up a little in some fields (not every field). Again another reason growers need to be checking every peanut field for maturity this year.
- **How does Late Season Temperatures affect peanut maturity and decision on when to dig.**
 - Typically, minimum temperatures in the upper 30's and lower 40's happen around the third week of October.
 - Temperatures in the lower 40's and lower for several mornings in a row will cause the plants to shut down and further development and maturation is over.
 - There is a misconception that temperatures in the upper 40's and lower 50's shut down the plant. Those temperatures will slow the maturation down but it will not cause it to stop.
 - The "normal" minimum temperature at Tifton (based on an 83 year average) is 61 degrees on October 1 and 51 degrees on November 1. In Plains the minimum temperature is 52.7 degrees on October 1 and 43.9 degrees on November 1.

- If there is a risk of a frost/freeze the best thing to do is leave the peanuts in the ground. They are insulated in the ground.
- <inverted less than 48 hours before a frost or freeze --- there is a high risk for frost damage.
- Inverted greater than 48 hours before a frost or freeze --- less risk of frost damage.

Incorrect Maturity = Significant Loss in \$\$

	Pounds lost/acre*	\$ lost/acre (0.25 / lb)
Dug 2 week early	744	\$179
Dug 1 week early	208	\$50
Dug at optimum	0	0
Dug 1 week late	601	\$144
Dug 2 weeks late	1746	\$419

2018 September Peanut Pointers: Entomology

Mark Abney

There are a lot of late planted peanuts in Georgia this year, and that could bring a few additional challenges for insect management in September and October. Probably the easiest mistake to make will be neglecting to scout later maturing fields once harvest begins. Velvet bean caterpillars and soybean loopers are in the system now. These pests can eat a lot of foliage in a short period of time, so we do not want to miss them. Nevertheless, there is no need for growers to get nervous and spray fields that are not at threshold. Late season treatment decisions are usually the hardest ones to make, but if we have accurate information about pest populations in the field, the risk of losing money is greatly reduced. Many areas of the state have started to dry out, and I am hearing about spider mites hanging around in cotton. In these locations I would probably not use a pyrethroid in non-irrigated fields with 30 or more days until digging.

The garden flea hopper has been extremely abundant this summer, and populations continue to grow. Producers and scouts are starting to notice the injury (stippling of the leaves). Some are getting anxious to spray and others are just curious about what to expect. I have never seen garden flea hopper injury get to the point that I thought an insecticide application was needed. That does not mean it can't happen. We will be spraying some garden flea hoppers and posting the efficacy results on the Peanut Entomology Blog.

I am seeing much higher than usual incidence of rootworm injury in my test plots in Tift County, and there are very high populations of rootworms in my trial at the research station in Plains. The wet weather we experienced for much of the 2018 growing season was perfect for rootworm development. Fortunately, rootworms will not be a problem everywhere. Unfortunately, there is very little a grower can do to prevent injury if a rootworm infestation develops in a given field. Agents should be aware that we could see increased incidence of insect damage when harvest gets into full swing, and there is little or nothing that could have been done to prevent it.

Finalizing Irrigation Schedules for Peanut

Wesley Porter, Extension Specialist, wporter@uga.edu

Please remember when you are following these curves (Figure 1 and Table 2) that they are developed based upon average ET values and are not truly representative of individual years. They should be used as guides and with caution. You should track irrigation and rainfall to determine the crop requirements and make a decision on the amount of irrigation to apply based on irrigation efficiency and current weather conditions. This means that hotter and drier weather would require higher amounts of irrigation, and cooler and cloudier weather would require less irrigation. It is recommended that a rain gauge be used with these curves for accurate estimation of rainfall amounts. In addition more advanced methods such as PeanutFARM.org, IrrigatorPro, or sensors could be implemented to develop a more sound irrigation scheduling method. For more information on irrigation scheduling, contact your county agent.

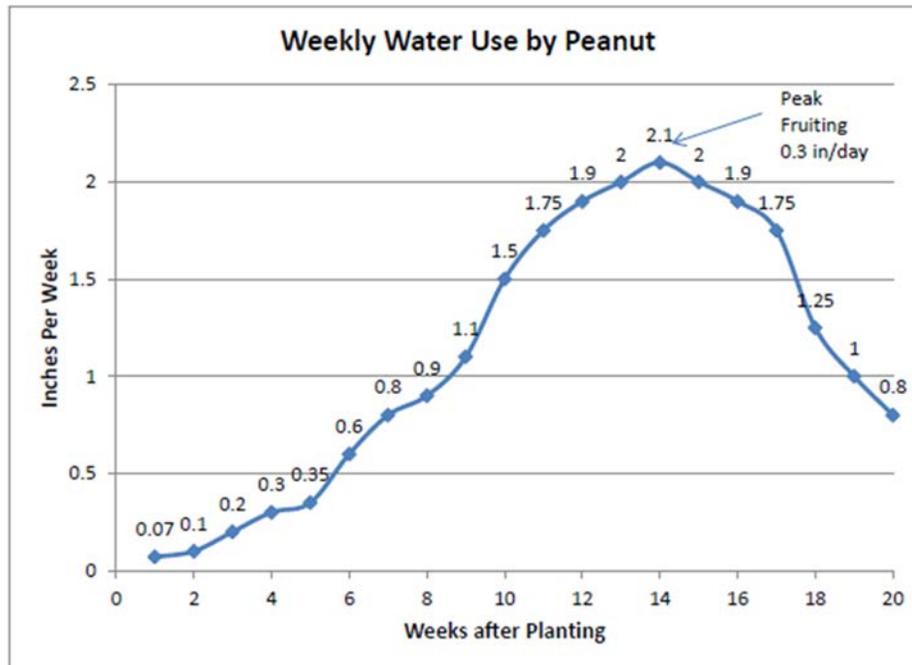


Figure 1. Weekly water requirement of peanut.

As we approach the end of the season, we need to proceed with an educated caution as to when to stop irrigating our crops. Terminating irrigation on peanut can be a little trickier and more of an art than it is with cotton. As you approach maturity, it is important to keep a check on the weather, your soil moisture, and the maturity level of your peanuts. As you approach 120 days after planting (DAP), or approximately 2100 growing degree days (GDD's), you should begin to check the maturity of your peanuts. Once they reach 140 DAP or approximately 2500 GDD's, they are approaching optimum maturity, and digging should be considered. This should be checked by blasting the peanuts and laying them on the peanut profile maturity board.

With all of this stated, Table 2 below shows the entire season water estimation for peanut, as you reach the 120-140 day range the water requirement drops significantly. You will not necessarily damage peanuts the way you can with cotton by over irrigating them once they reach maturity. However, you can cause problems with digging. If the soil is too dry, the digger will not be able to maintain the desired depth as easily, and if the soil is too wet, there may be issues with being able to get back into the field to get the peanuts dug during before they get past optimum maturity. Thus, in the case of peanut it's important to be able to get the crops dug and inverted at the optimum maturity level, not too early or too late.

Table 1. Weekly peanut water use estimations based on historical evapotranspiration.

Peanut Irrigation Schedule			
Days after Planting	Weeks after Planting	Inches per Week	Inches per Day
1 - 7	1	0.08	0.01
8 - 14	2	0.26	0.04
15 - 21	3	0.39	0.06
22 - 28	4	0.55	0.08
29 - 35	5	0.76	0.11
36 - 42	6	0.95	0.14
43 - 49	7	1.08	0.15
50 - 56	8	1.29	0.18
57 - 63	9	1.49	0.21
64 - 70	10	1.59	0.23
71 - 77	11	1.58	0.23
78 - 84	12	1.49	0.21
85 - 91	13	1.47	0.21
92 - 98	14	1.30	0.19
99 - 105	15	1.16	0.17
106 - 112	16	0.97	0.14
113 - 119	17	0.83	0.12
120 - 126	18	0.67	0.10
127 - 133	19	0.49	0.07
134 - 140	20	0.30	0.04
141 - 147	21	0.14	0.02
148 - 150	22	0.01	0.00

In conclusion, it is extremely important to monitor your fields' soil moisture towards the end of the season to ensure you stop irrigating at the proper time. Proper irrigation termination is critical on peanut. Peanut can be negatively impacted by poor timed end of season irrigation events and in different ways such as having improper soil moisture at the end of the season cause digging issues and potential yield loss. If the peanuts are allowed to stay in the ground too long, they can go beyond optimum maturity and yield loss will incur. Thus, irrigation termination is an important and sometimes difficult decision that has to be made, but with the proper information can be made correctly.

Peanut Maturity Ahead of Pace?

R.S. Tubbs

Early in the season there were some questions about whether the crop progress might be delayed because of consistent overcast weather reducing photosynthesis or ahead because of the consistent moisture adding more vegetation early for greater canopy closure and light capture and earlier flush of flowers. A look at the adjusted Growing Degree Day (aGDD) model suggests that we should be ahead of schedule. Using data from the Tifton weather station of the University of Georgia Weather Network, a field planted on April 26 had cumulative aGDD values as of September 9 (136 days after planting) of 2095 in the 2016 season, 2067 in 2017, and is well ahead of those marks this year with 2344 in 2018. Since water is a factor in the aGDD model, the additional total water along with its distribution over more days has helped the crop progress more rapidly this year. See Table 1 below where total precipitation is well ahead of any of the last 3 years, and especially ahead of the 30-yr averages for three different periods. In addition, the total number of rainy days is substantially more this year – a minimum of 21 more days with measurable rainfall during the span of April 15 to Sept. 9.

Table 1. Cumulative precipitation and number of rainy days in Tifton, GA from April 15 to September 9, respective time periods.

From April-15	To September-9	Precipitation[in]	Number of Rainy Days
2018	2018	30.80	80
2017	2017	18.34	59
2016	2016	23.15	53
2015	2015	25.07	53
1981	2010	19.16	N/A
1971	2000	18.66	N/A
1961	1990	20.74	N/A

However, that has not necessarily been seen in early reports of maturity profiles from April planted peanuts. I've heard reports of early planted peanuts projecting anywhere from 135 days on the maturity profile board (well ahead of average the last 5 years) to 155 days (well behind average the last 5 years). Delays in emergence occurred in some areas due to cooler than normal temperatures during the last week of April and water-logged soils. Thus, even though aGDD predictions may track ahead of schedule, growth stage development could have been delayed if the crop was slow to emerge and there were days early in the season that the plant was not photosynthesizing. Hence, be cautious about using either a "number of days" or an aGDD model prediction alone for maturity determination. Maturity progress is multi-faceted and these tools work best when used in tandem along with the maturity profile board. I recommend getting samples on the maturity profile board early this year so harvest does not sneak up. You can always sample again if it is too early, but you can't rewind the clock if they are overmature, running the risk of digging losses from peg deterioration or sprouting in the hull.

Late Season Disease Management and Harvest Issues

Bob Kemerait

Disease management late in the peanut season can be very easy and it can be quite confusing. In fields where there is little disease, growers can generally "coast" to harvest with confidence that there is little (or nothing) to be done to finish the crop. Where disease is present, growers must decide what measures should be taken to protect their crop as best they can as they limp towards harvest. The decision for "best" practices is based upon 1) projected time until harvest, 2) how much disease is in the field, and 3) overall yield potential of the crop. If there is not much time left until harvest, or if there is too much disease in the field, or if the yield potential is low because of other reasons, then there may not be any reason to spend more money on fungicides. However, in other situations growers can be justified in making a final fungicide application; the trick becomes what fungicide, or combination of fungicides, to apply.

Conditions in the field remain very warm and some, but not all parts of the Coastal Plain have been dry (or at least drier) over the past week. With less rainfall, development of leaf spot diseases and white mold should slow; however, there is still enough moisture for diseases to pose a threat. However, most growers are within weeks to a little more than a month away from harvest. It is unlikely that diseases will have time to develop and affect yields in fields where diseases are currently well managed.

Below are some typical situations that peanut growers may find themselves in and suggestions for control.

1. Grower is four or more weeks away from harvest and currently has excellent disease control.
 - a. Suggestion: I recommend that the grower apply at least one more fungicide at least for leaf spot control.
 - b. Suggestion: Given the low cost of tebucoazole, the grower may consider applying a tan-mix of tebuconazole (7.2 fl oz) + chlorothalonil (1.0 pt/A) for added insurance of white mold and leaf spot. NOTE: If white mold is not an issue, then the grower should stick with a leaf spot spray only.
2. Grower is four or more weeks away from harvest and has disease problems in the field.
 - a. If the problem is with leaf spot: Grower should insure that any fungicide applied has systemic/curative activity. If a grower wants to use chlorothalonil, then suggest that they mix a product like thiophanate methyl (Topsin M), cyproconazole (Alto), tetraconazole (Domark) with the chlorothalonil. Other growers may consider applying Priaxor or even Miravis; however, I would encourage careful thought before using either late in the season.
 - b. If the problem is white mold: Grower should continue with fungicide applications for management of white mold and leaf spot. If they have completed their regular white mold program, then they should extend the program, perhaps with a tebuconazole/chlorothalonil mix. If the grower is unhappy with the level of control from their fungicide program, then we can offer alternative fungicides to apply.
 - c. If the problem is underground white mold: Underground white mold is difficult to control. Applying a white mold fungicide ahead of irrigation or rain, or applying at night, can help to increase management of this disease.
3. Grower is three or less weeks away from projected harvest and does not currently have a disease issue. Good news! This grower should be good-to-go for the remainder of the season and no more fungicides are required.
4. Grower is three or less weeks away from harvest and has a problem with disease.
 - a. If leaf spot (or rust) is a problem and 2-3 weeks away from harvest, a last leaf spot fungicide application may be beneficial. If leaf spot is too severe (defoliation more than 20%), then a last application will not help.
 - b. If white mold is a problem and harvest is 3 weeks away, then it is likely beneficial to apply a final white mold fungicide. If harvest is 2 weeks or less away, then it is unlikely that a fungicide will be of any benefit.
 - c. NOTE: If harvest is likely to be delayed by threat from a hurricane or tropical storm, then the grower may reconsider recommendations for end-of-season fungicide applications.

Growers, in general, are encouraged to wait until appropriate harvest maturity to dig their peanut crop. However severe disease in a field may mean that growers should dig ahead of a projected digging date to minimize harvest losses.

There are no “hard and fast” recommendations for conditions when digging early is advised; however, here are some suggestions for when the grower is within two weeks of harvest.

1. Tomato spotted wilt, even when severe, is generally not a reason to dig early.
2. Significant defoliation from leaf spot diseases, 50% and beyond, is reasons to consider digging early to minimize harvest losses.
3. Active white mold in a field that affects greater than 40% of the crop could make digging early necessary.

Again, there are not hard and fast rules only guidelines for timing “best” harvest. Please let me know if you have additional questions.



Cotton Defoliation Considerations for 2018 (Freeman and Whitaker)

Most of our early planted cotton is quickly approaching (and has approached in some areas) time for defoliation. Cotton defoliation tends to be one of the most important aspects of cotton production each year. Timing and product selection are two of the more critical components regarding defoliation and confusion occurs not only by the thousands of tank mix concoctions but also the differences in personalities of growers with some wanting to pull the trigger too early and some wanting to wait on the very last boll to crack.

Timing of cotton defoliant application can be determined in many ways. However, the methods which we feel are most beneficial involve monitoring boll opening. The cotton plant has bolls of different ages and those bolls will typically open in the order in which they were set on the plant (such that bolls on the bottom of the plant will open before those on the top of the plant). Research in Georgia has clearly shown defoliation application should be made when 60 to 75% of the bolls on the plant are open. Whether one should lean towards 60 or 75% depends upon how uniform the crop is, as a plant that grown under optimum conditions can often be defoliated earlier than one that has gone through periods of stress. In any situation, it is almost always most profitable to defoliate the crop when the crop reaches 75% open boll.

The process of actually determining open boll percentages can be quite time consuming considering that multiple plants in each field should be assessed (and averaged) and this process should be conducted for each field separately. Therefore, there is another method to determine proper defoliation timing which is much quicker and easier. This process involves counting the number of main-stem nodes between the uppermost first position cracked boll and the uppermost first position boll we want to harvest (in some cases there are late set bolls which will not have time to mature that are set in the top of the canopy). With this method in Georgia we consider it is most profitable to defoliate the crop when it reaches 3 to 4 nodes above cracked boll (NACB).

Another method, which can be used in conjunction with determining open boll % and counting NACB is the “sharp knife technique.” This method involves using a knife to cut the bolls in half so that you can see the cross section. A harvestable boll should have lint that strings out as you cut it and the cotton seed should have a darkened seed coat with developed cotyledons. When we say “harvestable” we mean that the boll should be able to be opened

with the use of an ethephon product. In some cases, we use this method to determine the uppermost harvestable boll when figuring NACB.

In general, the best way to determine proper defoliation timing is to employ a combination of these methods. A proper timing of defoliation is the first step to a successful harvest. We should point out that most producers could defoliate their crop earlier than they typically do. In Georgia, we have always had to balance peanut digging in with cotton harvest and cotton is typically much more forgiving than peanut when it comes to harvest timing. However, we should make an effort to defoliate the crop when it is ready, as delays in defoliation applications can turn into lost profit. Specifically, delays in defoliation relate into delays in harvest and those delays often turn into lost yield and fiber quality.

Defoliation of a cotton plant can impact it in four ways. We consider those four functions to be (1) removal of mature leaves, (2) removal of juvenile leaves and plant tissue, (3) preventing regrowth of new leaves after defoliant application and prior to harvest, and (4) opening bolls. A particular cotton crop may need a defoliant application to impact one or more, typically all four, of these functions. Since one product is not effective on all of these functions, tank mixtures of products are applied to enhance the overall effect of the application. Product selection and application rates are determined by the condition of the crop (which functions need to happen) and condition of the environment (temperature, rainfall forecast, soil fertility, etc.). The charts below show defoliant performance by plant function and rates for two of the most widely used and effective defoliant mixtures.

PERFORMANCE RATING OF HARVEST AIDS BY FUNCTION				
COMMON NAME (BRAND NAME)	FUNCTION			
	Removal of Mature Foliage	Removal of Juvenile Foliage	Boll Opening	Regrowth Suppression
Ethephon (Prep, numerous brands)	F-G	F	E	P
Ethephon + Cyclanilide (Finish)	G-E	F-G	E	F
Thidiazuron (Dropp, FreeFall, TDZ)	G-E	G	P	G-E
Thidiazuron + Diuron (Ginstar, Adios, Cutout)	G-E	G-E	P	G-E
Tribufos (Def, Folex)	G-E	P-F	P	P
PPO Inhibitors (Aim, ET, Resource, Blizzard)	G	F	P	P

"Three-way" Defoliation Mixtures			
Season (Temperatures)	Ethephon (Prep)	Thidiazuron (Dropp)	Tribufos (Folex)
Early Season (highs >90, lows >70)	21 to 24 oz (1.33 to 1.5 pt)	1.6 to 3.2 oz	6 to 12 oz
Mid-Season (highs 80<89, lows 60<70)	24 to 32 oz (1.5 to 2.0 pt)	2 to 3.2 oz	8 to 12 oz
Late-Season (highs <80, lows <60)	32 - 42 oz (2.0 to 2.67 pt)	---	16 to 20 oz

"Prep + Ginstar"		
Season (Temperatures)	Ethephon (Prep)	Thidiazuron + Diuron (Ginstar, etc.)
Early Season (highs >90, lows >70)	21 to 32 oz (1.33 to 2.0 pt)	4.0 to 6.0 oz
Mid-Season (highs 80<89, lows 60<70)	24 to 32 oz (1.5 to 2.0 pt)	5.0 to 6.4 oz
Late-Season (highs <80, lows <60)	32 - 42 oz (2.0 to 2.67 pt)	6.4 to 8.0 oz

Additional Comments:

- Application water volume and pressure greatly impact overall performance. Often, these two factors are as if not more important than choosing which products and what rates to utilize. One should apply at least 15 GPA when using ground rigs (the more the better, 20 GPA is better than 15 and 25 is better than 20, etc.) and as much water volume as possible with aerial applications. Aerial applications can be extremely effective when products are applied such that spray is blown into the canopy.
- Follow product labels concerning the addition of additives. Additives may aid in uptake of some hormonal defoliant but may also increase the chances of leaf desiccation when combined with others especially with high temperatures. In general, when tribufos (Def) is used in the mixture, additives are not needed to improve efficacy.
- Rainfastness is always a concern with all products however thidiazuron requires a 24 hour rainfree period. However, when thidiazuron is used with other products (especially when mixed with tribufos) the actual rain-free period is reduced. If rainfall occurs before the rain-free period is reached, we suggest that you wait about 7 days and evaluate effectiveness and then make decisions on follow-up applications.

A few comments on cotton defoliation in 2018 with a limited supply of Thidiazuron

Many around the state are concerned about the limited availability of thidiazuron and how that will affect cotton defoliation in 2018. Thidiazuron (TDZ) is a key component of many cotton defoliation tank mix and is excellent at preventing regrowth after defoliation. Below are our thoughts and suggestions on the issue.

- First, go ahead and make plans with regards TDZ for this growing season. In general we vary rates of TDZ based on weather, potential for regrowth and amount of juvenile tissue present at defoliation. If one were to use the three-way on their entire crop, they could budget around 2.5 to 3.0 oz of TDZ per acre of cotton and vary rates in particular situations. With a significant portion of the state's crop being planted after June 1, a lot of our cotton will be defoliated when conditions are cool enough where regrowth will be less of an issue.
- Logistics - Be timely when defoliating and harvesting. Try to defoliate only what you will be able to harvest quickly and try not to leave cotton in the field for extended periods of time which will allow for regrowth to occur. Without TDZ, regrowth will certainly be much more of an issue in some cases and harvesting quicker after defoliation can limit the impact of regrowth and cotton quality.
- Use proper rate for conditions - since TDZ does not cause leaf desiccation, producers can use higher rates in some places compared to others and get more out of the TDZ we have. Typically, we would suggest using more early during the defoliation season and where more green tissue is present (3 to 4 oz/A on the high end and 1.5 to 2.5

on the low end). When temperatures drop into the lower 60's at night for several consecutive days the overall effectiveness of TDZ is limited and we could drop it out of the three-way mix.

- Calibrating equipment and use proper GPAs – Make sure your equipment calibration is correct. You may be applying more product than you think. Be sure to use as much water and pressure as possible to get more out of the TDZ that you apply. Defoliant are typically not mobile in the plant and to prevent regrowth TDZ should actually hit the part of the plant where regrowth occurs.
- The three-way is our typical standard for cotton defoliation in Georgia. If TDZ becomes unavailable, the next most effective option is usually ethephon and “Ginstar” (a pre-mix of thidiazuron + diuron). This application can be an extremely comparable option in most situations.
- Lower rates for lower regrowth potential – If all else fails and you cannot get the full rates of needed product, you should evaluate individual fields for their potential for regrowth. There are many factors that contribute to juvenile regrowth after defoliation but fields that are at the highest risk would be high fertility fields that experienced a premature cutout due to drought stress followed by good soil moisture and warm weather at the time of defoliation and after. These crops still have some “horsepower” left and will likely need a full rate. Fields that are at the lowest risk for regrowth are fields that have a heavy boll load, used all of its available nitrogen, and have begun naturally senescing leaves. These are fields that may only require a reduced rate of TDZ.
- So, in general our suggestions are:
 - Use the TDZ you have wisely, if regrowth potential is low then consider rates between 1.5 to 2.0 oz/A, if regrowth is expected and there is a lot of juvenile tissue is present consider higher rates between 3.0 to 4.0 oz/A
 - If no TDZ is available, mixtures of ethephon + Ginstar (TDZ + diuron) can be very effective at removing juvenile tissue and preventing regrowth. An 8 oz/A rate of the Ginstar products has 2.0 oz of TDZ (a 4 lb ai/A TDZ product) and 1.0 oz of diuron (4 lb ai/A diuron product)
 - If TDZ isn't available and Ginstar products are not used, be aware that regrowth can be more troublesome and harvest as timely as possible.
 - If no TDZ is available and regrowth potential is lower, then the mixture of ethephon + tribufos (Folex) can be very effective.
 - Mixtures of ethephon + PPO herbicides (ET, Aim, Display, etc.) can also be effective. However, these mixtures are sometimes less consistent than mixtures of ethephon + tribufos (Folex) and in general are more consistent later in the defoliation window.

Finalizing Irrigation Schedules for Cotton (Wes Porter)

Please remember when you are following the Checkbook method represented in Table 1 it was developed based upon average ET values and are not truly representative of individual years. Any Checkbook method should be used as guide and with caution. You should track irrigation and rainfall to determine the crop requirements and make a decision on the amount of irrigation to apply based on irrigation efficiency and current weather conditions. This means that hotter and drier weather would require higher amounts of irrigation, and cooler and cloudier weather would require less irrigation. It is recommended that a rain gauge be used with these curves for accurate estimation of rainfall amounts. In addition more advanced methods such as the SmartIrrigation Cotton App, IrrigatorPro, or sensors could be implemented to develop a more sound irrigation scheduling method. For more information on irrigation scheduling contact your county agent.

As we approach the end of the season, we need to proceed with an educated caution as to when to stop irrigating our crops, especially cotton. Due to our typical high humidity and high rainfall amounts during the fall we typically have problems with boll rot and hard lock. It is important to remember that as we approach open boll our water requirement drops dramatically (Table 1).

It is important to check the soil moisture in your field and determine if you have enough to get you through until defoliation. Keep in mind that most of our soils have a water holding capacity of about 1.0 in/ft. This means that the plant will have access to 1.0” of water per foot of rooting depth. However, this year since it was so early many of the plants did not develop a very thorough root structure. In most cases we can safely say that cotton is able to access moisture from about a two foot rooting depth. However, this year that may not be the case. This means that the crop may not have access to deep moisture, so it may dry out faster than normal. Once the crop reaches open boll it only requires about 0.5 inches of water per week. As can be seen in Table 1 below, the water requirement dramatically drops after this level. This means that if you can detect sub-surface moisture with a shovel or probe there is probably adequate moisture to last

Cotton Irrigation Schedule				
Growth Stage	DAP	Weeks after Planting	Inches/Week	Inches/Day
Emergence	1 - 7	1	0.04	0.01
	8 - 14	2	0.18	0.03
Emergence to First Square	15 - 21	3	0.29	0.04
	22 - 28	4	0.41	0.06
	29 - 35	5	0.56	0.08
First Square to First Flower	36 - 42	6	0.71	0.10
	43 - 49	7	0.85	0.12
	50 - 56	8	1.08	0.15
First Flower to First Open Boll	57 - 63	9	1.28	0.18
	64 - 70	10	1.47	0.21
	71 - 77	11	1.52	0.22
	78 - 84	12	1.43	0.20
	85 - 91	13	1.42	0.20
	92 - 98	14	1.33	0.19
	99 - 105	15	1.16	0.17
First open boll to >60% Open Bolls	106 - 112	16	0.88	0.13
	113 - 119	17	0.69	0.10
	120 - 126	18	0.51	0.07
	127 - 133	19	0.35	0.05
	134 - 140	20	0.22	0.03
	141 - 147	21	0.12	0.02
Harvest	148 - 154	22	0.05	0.01
	155 - 161	23	0.02	0.00
	162 - 168	24	0.00	0.00
	169 - 175	25	0.00	0.00

until defoliation. Thus, you should terminate irrigation. Especially if you see any open bolls in the field, irrigation should be terminated.

If you feel like you do not have enough soil moisture to last until defoliation, and there is no guaranteed rainfall in the near future then you may consider one more irrigation application. The recent lower humidity and drier conditions can help reduce the instance of boll rot and hard lock, but do not irrigate too much. Use the table above if you have any questions about finalizing your irrigation for the season. Contact your local county extension agent if you have any further questions.

Terminating Insecticide Applications (Phillip Roberts)

The decision to terminate insect controls can be challenging in some fields but a few basic considerations will assist in that decision. When evaluating a field a grower must first identify the last boll population which will significantly contribute to yield (bolls which you plan to harvest). In some situations the last population of bolls which you will harvest is easy to see (i.e. cotton which is loaded and cutout). In others, such as late planted cotton, the last population of bolls you will harvest will be determined by weather factors (the last bloom you expect to open and harvest based on heat unit accumulation). Once the last boll population is determined the boll development or approximate boll age should be estimated. Depending on the insect pest, bolls are relatively safe from attack at varying stages of boll development.

Insect Pest(s)	Approx. Boll Age (days)
Corn Earworm Tobacco Budworm	18-20 bolls fully sized
Stink Bugs	25
Fall Armyworm	bolls near maturity
Foliage Feeders soybean looper beet armyworm southern armyworm	bolls mature
Sucking Insects whiteflies aphids	harvest (honeydew accumulation on lint)

The table below list approximate boll age in days which bolls should be protected for selected insect pests. Cooler temperatures will slow plant development and subsequent boll age values may increase in such environments. It is assumed that the field is relatively insect pest free when the decision to terminate insecticide applications for a pest is made.

Late Season Management Considerations for Diseases and Nematodes (Bob Kemerait)

Though not over yet, it will not be too much longer until pickers are in the field and modules and round-bales fill the gin yards. Diseases and nematodes have been much more of a problem in 2018 than in any other year that I can remember. This was and continues to be,

in large part, due to the frequent rain events and wet weather throughout much of the season. Spread of fungal and bacterial diseases are favored by such.

There are seven significant disease/nematode conditions present in Georgia's cotton fields now and while there is not much growers can do or need to do about it now, still they should pay attention so as to make the best management decisions in 2019.

1. Stemphylium leaf spot is present in many fields and is identified as small-to-moderate sized lesions, often encircled by a dark, purple ring, on leaves showing signs of nutrient (potassium) deficiency. Stemphylium only occurs in conjunction with a potassium deficiency in the plant and can lead to rapid defoliation and significant yield loss. Stemphylium leaf spot is a very important problem in the state and is likely overlooked as growers have either become too familiar with it or do not think that there is much that can be done. Stemphylium leaf spot typically occurs in the same areas of a field year after year- sandier areas, sometimes infected with nematodes. Grower should take special steps to manage soil fertility (and nematodes) to reduce losses to this disease.
2. Target spot has been especially widespread this season because of extended periods of wet weather. As I have often said, use of fungicides is not always profitable if the level of target spot is low because of hot and dry conditions. However, I believe most growers who protected their cotton crop with fungicides in 2018 will see some benefit in doing so. We should have some interesting data to share with the growers during the winter meeting season.
3. Areolate mildew has been problematic again for the second year in a row across a large section of the cotton production region of Georgia. I am not really sure why that is, but suspect that the fungus successfully survived in crop debris from last year and was brought on again by the rainy season. I am hoping that this disease does not become an every-year occurrence and problem for our cotton producers. We should have some data to share on control and yield after use of fungicides in the upcoming winter meeting season.
4. Bacterial blight became established in some fields very early in the season and I had expected it to be a major problem. Statewide, bacterial blight has been a very minor issue in 2018, demonstrating that the development and spread of a disease can be difficult to predict. Growers are reminded to be careful in their selection of varieties for 2019 as resistant varieties are THE most important measure for managing this disease.
5. Fungal boll rots are likely to be quite severe in the 2018 season, especially in fields with excessive, rank growth. In some situations, limited defoliation from leaf diseases could actually be a good thing by opening up the canopy and allowing airflow to

reduce humidity and dry the bolls. Fungicides are not an effective management tool for control of boll rot.

6. Fusarium wilt is becoming an increasing problem in Georgia's cotton fields. I don't know if this is because the problem is spreading or simply because growers are paying greater attention to it. Nonetheless, at this point Fusarium wilt can ONLY be managed in our fields by managing the parasitic nematodes associated with it, often by treating the field with a nematicide. Again, we should have some excellent data to share after this field season.
7. Nematodes in general (root-knot, reniform, sting and lance) are a significant problem in our cotton fields. Growers are encouraged to take the time after harvest and before cold weather hits to take soil samples from areas of poor growth in order to determine if nematodes are indeed a problem.

Taking stock of disease and nematode issues at the end of the 2018 season should help growers to make effective management decisions for 2019.

Gin Talk (Kane Stains)

As summer winds down, the advent of fall, Dawgs football, and harvest-time rapidly approaches. In just a few short days or weeks, rural Georgia roads will be inundated with cotton pickers, module trucks, and various other harvest-related machinery. Before we know it, all of the blood, sweat, and tears that were poured into this year's cotton crop will culminate in a string of 500 lb. bales. Throughout the growing season, farmers and managers have labored over their crop, weighing every management decision against the ultimate bottom line. After all, farming and especially cotton farming is the ultimate game of dollars and cents; some would argue that it's more cents than dollars. One of the final management decisions that one can make is to ensure that once the cotton is defoliated and ready for harvest, it arrives at the gin free of any contamination.

As most are aware, global cotton buyers frown upon receiving contaminated cotton; as they should. Most often, one's mind immediately gravitates to plastic products when discussing cotton contamination. Of the leading contaminants plastic certainly shows up most often, but cotton contamination is technically any substance in the bale other than ginned cotton lint. Items such as oil, grease, red shop rags, wrenches, chains, cotton string or rope, or the occasional extension ladder have all found their way into harvested seed cotton and some even making it as far as the bale press. Most frequently, yellow module wrap and black horticultural plastic take the "wrap" (no pun intended) for cotton contamination. However, the occurrence of plastic shopping bags found in post-harvest seed cotton is most certainly on the rise.

The problem with plastic contamination is exponentially magnified once the contaminated cotton enters the gin plant. As the seed cotton flows through the system, plastic and other contaminants may become lodged in various nooks and crannies of the machines. Once the contamination reaches the gin stand, thousands of sharp saw teeth grind it into miniscule pieces, thus rendering it nearly impossible to remove at the gin level. This scenario usually creates a two-fold problem because the plastic can remain lodged until a later time, during which another grower's (potentially contamination-free) cotton is being ginned and thus becomes contaminated. With the use of Bale ID Tags, contaminated cotton can be traced back to the individual farm that produced it. Unfortunately, someone could potentially pay the price for another's negligence. As a side note, your local cotton gins are doing everything in their power to detect and remove contamination as soon as the module arrives on their yard but they need the help of growers, managers, consultants, and farm staff to ensure that the problem is minimized.

The moral of the story is that Georgia has developed a reputation for producing, ginning, and shipping extremely high levels of superior quality and contamination-free cotton. As you're riding the farm roads and scouting your crops, or as you're spending those countless hours aboard a cotton picker, I encourage you to take the time to stop and remove any items that may have found themselves in a cotton field. Whether it's yours or your neighbor's, taking the time to remove that "dollar-store" bag from the turn rows will pay dividends in the long run for us as an industry. If Smoky Bear were to advocate for cotton, he'd say "Only You Can Prevent Cotton Contamination." Safe harvest to all!

Important Dates:

Field Days:

Tifton – Cotton and Peanut Field Day – September 5th

For more information on any of the discussed topics please contact your local UGA Extension Agent.