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The University of Georgia
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Lee County Ag Newsletter

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The Importance of Preplant Fertilizer – Don't Delay or Cut Out N, P, or K (*Glen Harris*): Ok, we all know that fertilizer prices are high right now. But so are cotton prices. And you are thinking about cutting back on how much N, P and K you put out. However, if you cut back on fertilizer you may cut back on yield and fail to cover your budget. If you attended a county meeting this winter you heard me talk about how, believe it or not, it still pays to fertilize cotton (and corn) for a realistic yield goal. I also covered other things to consider such as banding P&K, in-furrow fertilizers, chicken litter and other fertilizer "by-products". But there are no silver bullets. If you missed this information you can view the video recording of it on ugacotton.com/presentations.

Something that came up right at the end of the meeting season was about timing of fertilizer applications. You may have heard about the "4Rs's of fertilization", i.e. having the right rate, source, timing and placement. In my opinion there is too much emphasis placed on rate and not enough on the other three. For example, related to timing I've heard some are recommending not applying any nitrogen at planting. This would go against our UGA Extension recommendations and could end up reducing cotton yields (again making it hard to meet your budgets at the end of the year). So lets take a quick look at the timing of N,P and K fertilization on cotton:

Nitrogen – The UGA Extension recommendation is to split apply nitrogen where you put ¼ to 1/3 of your total N rate at planting and then the remainder at sidedress. Preplant nitrogen is important for early growth and to get off to a healthy start. If you do not put any preplant nitrogen out you are going to automatically reduce your yield potential. By how much depends on a number of factors such as soil type and residual

nitrogen present. In some cases it might not hurt you that much…but in others it could get you behind and you can never catch up or regain that yield potential.

Phosphorous – is important for early seedling root growth so it makes sense it needs to be applied preplant. In fact, if you get more than 30 or 40 days after planting cotton and have not applied phosphorous when need it is probably too late and again yield potential will suffer.

Potassium – Even though a cotton plant does not need a lot of potassium early on (and is one of the reasons we usually do not include K in a cotton starter fertilizer), research studies have shown that applying all your potassium "up front" or close to planting, followed by foliar K during peak bloom is more effective for avoiding potassium deficiency than "split applications" (some at planting and some at sidedress). Potassium is just not the same as nitrogen and does not need to be split applied like nitrogen does.

So in summary, all the recommended P and K should be applied pre-plant or at planting and enough nitrogen to get off to a good start and get you to sidedress time. Around 30 lbs N/a is preferred at planting but don't cut back past 20 lb N/a at planting, and if you do, be ready to go a little earlier with your sidedress application, that is closer to first square than first bloom.

A Pre-Season Checklist for Diseases and Nematodes of Cotton (*Bob Kemerait*): The 2022 cotton season is upon us and some of the most important decisions growers can make to protect their crop from nematodes and diseases can only be made BEFORE the furrow is closed. Once the furrow is closed, the grower watches from the sidelines as the cotton crop battles nematodes, seedling disease, Fusarium wilt, and bacterial blight. The most important tactics to protect a cotton crop from these maladies are over when the furrow is closed.
Seedling diseases are a significant threat to cotton production in Georgia and will result in significant stand loss if not effectively managed. The vast majority of seedling diseases are caused by fungal pathogens, especially *Pythium* (pre-emergent damping off) and *Rhizoctonia solani* (post-emergent "soreshin"). Key tactics to minimizing risk to seedling diseases include:

1. Avoid planting into soils that are not 65°F or warmer.

2. Do not plant if wetter and cooler temperatures that could significantly drop soil temperatures are in the forecast in the upcoming 7 days.

3. Ensure that seed is adequately protected with a seed treatment that included a combination of fungicides to protect against Rhizoctonia, Pythium, and other fungal pathogens.

4. When growers will plant into a field where risk to seedling disease is increased, e.g. short cotton rotations or conservation tillage, consideration should be given to use of additional seed treatments or in-furrow fungicides.

Nematodes will always be a threat to cotton production in Georgia. Decisions made at planting could easily be the difference between a profit and a loss in a specific field or in multiple fields. Key tactics to protecting a crop against nematodes include:

1. Consider rotation with peanuts to reduce risk to nearly all nematodes that affect cotton. Planting corn in rotation with cotton can reduce risk to reniform nematodes.

2. Pull soil samples at harvest in the previous season to have a "heads up" for the types of nematodes and the population size of parasitic nematodes waiting for the next cotton crop. Knowing "what" and "how many" will allow growers to make the most informed decisions.

3. Where a field is infested with southern root-knot or reniform nematodes, growers should recognize that they have the opportunity to plant resistant varieties. A nematicide is not needed where root- knot nematode varieties are planted in a root-knot infested field. It is unlikely that nematicides will be needed when a reniform nematode resistant variety is planted into a reniform-infested field. If sting or Columbia lance nematodes are present, resistant varieties are not available and the only management tool is to use a nematicide.

4. Where a resistant variety is not planted into a field infested with plant-parasitic nematodes (southern root-knot, reniform, sting, or Columbia lance), growers are advised to consider using a nematicide to protect the crop. Fumigation with Telone II (3 gal/A) is the most aggressive treatment. Next would be AgLogic 15G (5-7 lb/A) and Velum (6.5-6.8 fl oz/A) followed by nematicide seed treatments to include Copeo, Avicta, and BIOst.

Fusarium wilt is a serious problem in specific fields. Fusarium wilt results from the interaction between the Fusarium fungus and nematodes which damage the cotton crop. The damage from the nematodes allows the fungus to infect the roots of the cotton plant. To best manage Fusarium wilt disease, growers must effectively manage nematodes in the field, often with a nematicide.

Bacterial blight has not been a significant problem in Georgia over the past few years; however this disease can cause yield loss in specific fields. The only effective management strategy for bacterial blight is to plant a disease-resistant variety.

Approximately five months after cotton is planted, the cotton is harvested. Five months is a long time. But five months can seem even longer if the crop is not adequately protected from diseases and nematodes on the day that the furrow is closed. Make your decisions carefully.

Thrips Management: Use an At-Plant Insecticide (*Phillip Roberts*): Thrips are consistent pests of cotton, infesting nearly all cotton acres planted in Georgia each year. Thrips are the only insect pest of cotton that a preventive insecticide is recommended. We consistently observe a positive yield response to at-plant insecticides used for thrips control. A reactive approach based on scouting and use of thresholds is recommended for less consistent insect pests such as stink bugs, corn earworms, whiteflies and others to maximize profitability. With most insect pests there are agronomic and management practices which influence the risk and severity of infestations. Below are a few thoughts to consider as you make decisions for your at-plant thrips management program.

1. Use a preventive insecticide at planting. Thrips will infest near 100 percent of cotton planted in Georgia. We consistently observe positive yield responses in UGA research and on the farm when an at-plant insecticide is used for thrips control. It is not feasible to control thrips with foliar sprays alone; multiple foliar sprays applied in a very timely manner would be required.

2. At-plant insecticide options include infurrow granule applications of aldicarb, infurrow liquid applications of imidacloprid or acephate, and commercial seed treatments of imidacloprid,

thiamethoxam, and acephate. Infurrow applications of aldicarb, imidacloprid, and acephate tend to provide greater control and longer residual control compared to seed treatments.

3. Thrips infestations are generally higher on early planted cotton compared with later planted cotton. High risk planting dates for thrips injury is a moving target from year to year. The **Thrips Infestation Predictor for Cotton** (http://climate.ncsu.edu/CottonTIP) is a web-based tool which predicts thrips risk by location and planting date. This tool was developed by researchers at North Carolina State University and has been verified using thrips data from Georgia. The website has information about the tool and also includes a link to a presentation describing the tool and how it can be used in the "About" tab. If the risk is high for thrips on a given planting date, consider using a more active at-plant insecticide or be prepared to scout and potentially make a timely foliar spray if a seed treatment is used.

4. Thrips infestations are significantly lower in reduced tillage production systems compared with conventional tillage. In general, the more cover or residue on the soil surface the greater the reduction in thrips.

5. Cotton seedlings are most sensitive to yield loss from thrips feeding during early stages of development. Excessive thrips feeding and plant injury on 1-2 leaf cotton has a greater yield penalty than cotton infested at the 3-4 leaf stage. Once cotton reaches the 4-leaf stage and is growing rapidly, thrips are rarely an economic pest.

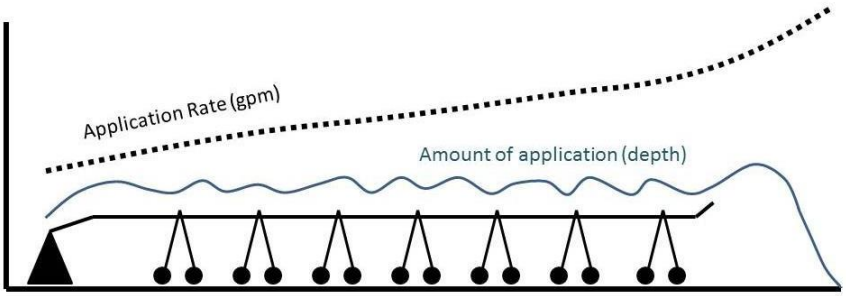
6. Slow growing seedlings are more susceptible to thrips than rapidly growing seedlings. If cotton is slow growing due to herbicide injury, cool temperatures, or other stresses, be sure to scout for thrips and thrips injury. Thrips feed in the terminal bud on unfurled leaves so more feeding occurs on each unfurled leaf if the plant is growing slowly.

7. Scout for thrips and injury early. The threshold for thrips is 2-3 thrips per plant with immatures present. The presence of immature thrips suggests the at-plant insecticide is not providing control (i.e. thrips eggs were laid on the plant, eggs hatched, and immature thrips are surviving). Immature thrips are crème colored and lack wings whereas adults will typically be brown with wings.

Irrigation System Prep and Early Season Water Requirements for Cotton Production (*Wesley Porter, David Hall, Jason Mallard*): We are moving into the time when cotton planting is beginning, countless hours and many dollars have been spent on tillage, spraying and planting equipment to be prepared for another year. However, make sure that you do not overlook one of your largest investments and one that is just as important as any other, your irrigation systems. Now is an optimal time, if you have not already done so, to do routine and preventative maintenance on your irrigation systems to ensure they are in top shape. There are two important actions that need to be performed before you begin planting

your cotton. The first one is an overall irrigation system check and the second is specifically focusing on water application uniformity of your system. First, look up the Spring Center Pivot and Lateral

Irrigation System Preparation | UGA Cooperative Extension (B1452) and go through the checklist that includes all main components on your irrigation system to ensure that they are working properly. Some of these components can include but are not limited to the power unit, pumping system, pipes and drains, electrical systems (which includes cellular connections for remote monitoring and GPS), safeties, tires, gear box oil level and leaks, and the switches on the auto stop feature. Once you have checked all of these components, start the irrigation system and finish checking components by documenting any clogged or partially clogged nozzles along with any visible leaks. Also, check the line pressure, flow, sprinklers, end gun arc travel and booster pump operation. A reduction in pressure and GPM from last year or brass and excessive sand in the trap may be a good indication of potential well issues. An example of the system flowrate and application rate for a center-pivot irrigation system is represented in Figure 1. It is important to remember that due to increasing travel speed as we move towards the end of the pivot, the system flow rate (represented as dashed black line) will go up, but the application depth (represented as solid blue line) should remain consistent. This is achieved with properly sized sprinkler packages.



Application Rate and Depth

Figure 1. Application rate and depth across a pivot tower.

It is important to note that it can be very difficult to detect differences between individual sprinklers and banks of sprinklers on a pivot visually so it is strongly recommended that an application uniformity test be performed on the center pivot to detect any discrepancies along the tower length. A UGA Factsheet titled Evaluating and Interpreting Application Uniformity of Center Pivot Irrigation Systems | UGA Cooperative Extension (C911) is a very good step by step guide to accomplish this process. If you need any further guidance on either of these, or have interest in having an on-farm uniformity test performed, contact your UGA County Extension Agent and they can help get the process started. By following these suggestions, you should have a properly operating pivot ready to go for the upcoming production season.

Once you have the pivot up and running and are confident that it is adequately applying water uniformly with no problems, it is time to start thinking about water requirements for your crops. It's important that you keep an eye on the current weather and soil moisture conditions as you begin planting crops. Cotton typically does not require a lot of water in the first month after planting and in some cases if adequate rainfall is received cotton can go up to squaring and even bloom without additional irrigation applications as exhibited by the red box and water use curve below (Figure 2). However, if it gets hot and dry you may need to apply a few small irrigation applications. The red box below represents the first five weeks of cotton water requirements after planting. Keep a track of rainfall and temperature, your irrigation

efficiency (typically around 65-70% for high pressure systems and 80-90% for low pressure systems), and make irrigation applications accordingly. Keep in mind that the water requirement below is irrigation plus rainfall, and the weekly water requirement recommendation was developed based on a historical average of evapotranspiration. So, your actual water/irrigation requirement may vary slightly based on weather conditions and rainfall during the growing season. For a more in-depth irrigation recommendation it is suggested that you look into implementing either a computer scheduling model either online or via a Smartphone App, or soil moisture sensors. As cotton responds negatively to over-irrigation during critical growth periods usually causing yield reductions and increases in water applied. Even if the yield is not reduced methods such as the Checkbook have shown to have much higher irrigation application amounts with lower irrigation water use efficiency (IWUE) amounts, meaning profit is lost. An example of this is seen from the 2020 growing season in Table 1 below. For more information about either of these contact your local county Extension Agent.

As mentioned earlier, UGA Extension's cotton irrigation guide recommends very little water once the stand is established. Once the planters start rolling, farmers will be focused specifically on planting to try to finish while sufficient moisture is present to ensure a good germination and stand. Once moisture begins to leave the optimum planting level, plan your planting schedule around an irrigation event the day before planting, if available. Keep in mind, you will want to be planting the next day to optimize the moisture. In doing this, careful consideration to the amount of water applied must be determined using such factors as available moisture, soil type and projected weather. There is a fine line between not being able to reap the benefits of irrigation by not applying enough water or having to wait an extra day to dry out, costing time and money.

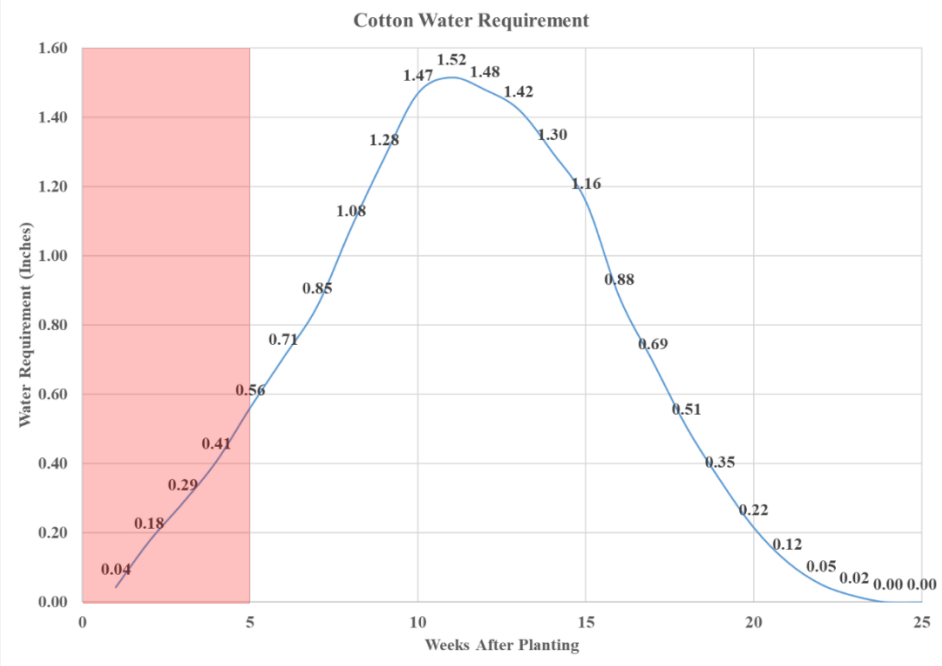


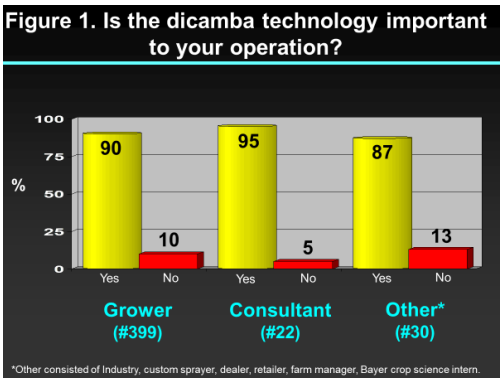
Figure 2. Seasonal Cotton Water Requirement.

UGA Extension has developed a quick and easy irrigation scheduling guide that is laminated and contains the four major row crops grown in Georgia. Attempts to distribute throughout the State are being made at the present. Please check with you local Extension Agent for availability. The guide can also be downloaded at Irrigation Reference Guide for Corn, Cotton, Peanuts, and Soybeans | UGA Cooperative Extension.

Table 1. 2020 Cotton irrigation scheduling data, showing that more advanced methods provide higher yields and IWUE.

Treatment	Irrigation (in)	Total Water (in)	Lint Yield (lb/ac)
Dryland	1.0	22.36	795
45 kPa Sensor	5.5	26.86	1304
20 kPa Sensor	7.75	29.11	1293
75 kPa Sensor	3.25	24.61	1129
Irrigator Pro	5.5	26.86	1245
CropX	4.0	25.36	1113
Valley Scheduler	8.5	29.86	1240
App	6.25	27.61	1270
Checkbook	11.0	32.36	1196

Pesticide Drift Complaints Decline While Dicamba Technology Adoption Has Increased (*Stanley Culpepper*): Adoption of dicamba-tolerant cotton across Georgia has been rapid, with greater than 90% of the seed planted in 2021 containing the trait. This rapid adoption is a response to both improved weed management systems and the ability to keep herbicides on-target.



When surveying 451 individuals (399 farmers) across Georgia, 87 to 95% reported that dicamba technology was important to their farm (Figure 1). Additionally, 57% of the growers noted Palmer amaranth control improved greater than 50% when using the technology; 94% of growers noted at least a 10% improvement in control (Figure 2).

With pesticide stewardship being critically important to the sustainability of humankind, the University of Georgia and the Georgia Department of Agriculture have worked closely with farmers and other pesticide applicators, helping them make wise decisions. This collective effort has led to a 90% reduction in pesticide drift complaints documented by the Cooperative Extension Service from 2015 through 2021. Additionally, there has only been one confirmed dicamba drift complaint from its use in agronomic crops by the Department of Agriculture, since 2017. Many factors have contributed to this success with the collective and cooperative effort of growers, applicators, regulators, Extension agents, consultants, scientists, and local industry partners has been a key element.

Of course, the real question is what happens to the dicamba technology during 2022? That decision is likely to be made in the courts sometime during the year, eliminating our ability to have any influence. Regardless, Georgia's cooperative commitment in stewarding agriculture is an amazing feat that should be briefly celebrated, and then our efforts must expand, as we continue to fight daily to maintain the practical use of all pesticides.

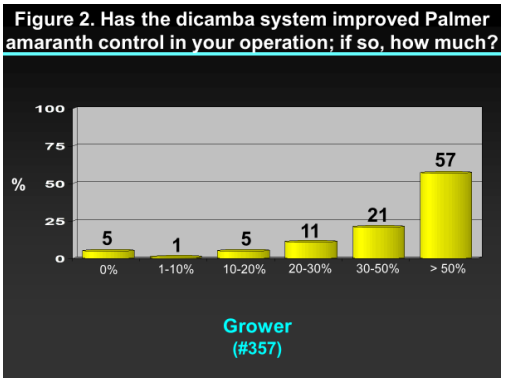


Figure 3. UGA Extension Drift Complaint Survey

Planter Preparation ***(Simer Virk and Wes Porter)***: While we still have few more weeks until cotton planting begins across the state, this is a perfect time for growers to start checking their planters and perform any required maintenance for cotton to ensure they are ready for the field. While some of the planters may have already been used to plant corn, it's important to note some significant changes in settings to ensure accurate metering and seed placement for cotton. Planter malfunctions in the field or mistakes at planting can become costly, especially with the input prices this year so it is important to ensure that the planters are dialed in for peak performance. A planter checklist is available here (Planter Checklist (UGA)) for growers to utilize and go thoroughly over the planter to check if any parts need replacement or adjustment before heading to the field. When growers get in the field, it is also important that they get out of the tractor during first few passes and check seed depth and spacing behind the planter to check if everything is setup and functioning properly for the given field conditions. Here are few other key points to consider related to planter setup and performing in-field checks when planting cotton:

1. **Seed depth** – Recommended seed depth for planting cotton is 0.5 to 1.0 inches (if you used the same planter for corn, it is most likely set closer to 1.5 to 2.0 inches deep). Verify seed depth before planting both on a hard surface and in the field. Mechanical seed depth settings can vary among the row-units on the same planter so take the time to check planted seed depth for each row-unit and make necessary adjustments. This is very important especially when planting at shallower depths (0.5 inch)

as even a small deviation from target depth setting on some row-units can result in seeds on top of the ground instead of in the soil with proper seed-to-soil contact.

2. **Downforce** – Proper planter downforce is important to achieve target seeding depth so make sure the downforce system (whether utilizing mechanical or active system) is set to apply adequate downforce on each row-unit. For planting cotton, the required downforce could range anywhere from none (just the weight of the row-unit itself) up to 200 lbs depending on the soil type, moisture and field conditions at planting. Lighter sandy soils and conventional tillage systems will require considerably less downforce than heavy loamy soils and conservation systems. Remember it is common to have variable conditions within a same field, so make sure to adjust settings as field conditions change within the same field or from one field to another if possible.
3. **Seeding Rate** – Recommended seeding rate for cotton is at least 2 seeds per row-foot to attain a plant population of 1.5 to 1.75 plants per row-foot (again here your seed plate and plant population for corn are drastically different so adjust population accordingly for cotton). For growers planting closer to 2 seeds per row-foot, it is critical to avoid any seed metering and placement issues as it may lower the planted population below the minimum recommended seeding rate. For growers without a seed monitor, it is highly recommended to check seed meters on a test stand before planting for verify meter performance, especially singulation. Unnecessary skips or multiples will result in poor or uneven stand establishment which can further impact yield if stand is reduced significantly. Cotton seed being smaller than corn and peanut seed is also very sensitive to vacuum pressure, so make sure to adjust the vacuum appropriately to avoid skips and multiples.
4. **Seed Placement and Seed-to-Soil Contact** – Proper setup and functioning of row-cleaners (when planting in conservation systems), double-disc openers, gauge-wheels, and closing wheels for prevalent field conditions is critical to attain adequate seed placement and proper seed-to-soil contact. Make sure that the double-disc openers are creating a true V-shape furrow, gauge-wheels are running tightly (but not rubbing excessively) against the opening-discs, and closing wheels are aligned perfectly behind the planter and set to apply adequate pressure on the furrow. Check for any signs of improper furrow formation when doing field checks behind the planter and make necessary adjustments. It is important to have both good seed placement and seed-to-soil contact for timely and uniform emergence.

Planting Technology – Issues with planting technology in middle of the planting season can cost significant time and money. Make sure to perform a thorough and timely inspection (at least a week or more) before planting to check status and functioning of all technology components including GPS, seed monitor, wiring harnesses, seed tube sensors, rate control module, electric seed meters, and active downforce system (if available) as well as for any subscription or latest firmware updates for the GPS and the in-cab display. Back up your planting data from the previous year if haven't done so already and make sure the seeding prescriptions are ready to go if utilizing any variable-rate seeding in your operation this

year.

Planting Date Selection, Germination and Emergence in Cotton (*John Snider, Gurpreet Virk, Ved Parkash, and Camp Hand*): As the 2022 planting season approaches, growers prepare to plant cotton as soon as the opportunity presents itself. For cotton, planting too early limits seedling emergence and stand establishment due to low temperature during the early part of the season, and excessively late planting can negatively affect lint yield and fiber quality through premature crop termination via exposure to cold, late season temperatures. Therefore, selection of a planting date with acceptable temperature conditions for planting is a critical factor for successful crop production. Recommendations for temperature conditions are as follows: a four inch soil temperature greater than or equal to 65 °F in the first two to three days after planting and a favorable five-day temperature forecast. Under favorable conditions, germination and seedling emergence takes 4 to 9 days after planting or after approximately 50 to 60 heat units (DD60s) have accumulated. Numerous studies have demonstrated no significant differences in final lint yield when cotton was planted between April 1 and May 25. However, for South Georgia, planting between late April and early May is considered a safer early-season planting window depending on prevailing environmental conditions (Hand et al., 2022). Another valuable resource available to growers throughout the US cotton belt is the Cotton Planting Conditions Calculator developed by North Carolina State University (http://climate.ncsu.edu/cotton_planting). This tool presents the five-day temperature forecast (DD60 forecast) information into 6 nominal planting condition categories ranging from Poor to Excellent and is a user-friendly resource for cotton growers.

Having a general understanding of the physiological processes occurring during the germination and emergence phase of crop development helps growers better understand and prepare for some of the common challenges faced during planting season. Immediately after planting, within 4-6 hours, seeds begin to take up water during a process known as imbibition. Thereafter, a number of physiological process are activated and metabolic activity increases along with respiration rates and mobilization of energy reserves (oil and protein), which collectively drive embryo growth. Within one or two days after planting, depending on temperature, the radicle (Image 1A) emerges out of the seed coat. This represents the end of the germination process, and the cotton plant has now entered the seedling stage. The primary root grows downward into the soil profile and the region just below the cotyledons (the hypocotyl) takes on a hook-like appearance and extends upward, pulling the cotyledons up through the soil. Emergence is complete when the cotyledons have been pulled above the soil surface (Image 1B).

Within the context of these developmental milestones, the requirements for seed germination and emergence can be readily understood. For example, cotton seeds should be placed 0.5 to 1 inch deep in good contact with moist, yet well aerated soil. These conditions ensure that there is sufficient moisture available for imbibition and adequate oxygen available for aerobic respiration, which is necessary to fuel early season growth. Stand responses to waterlogging, soil crusting, soil compaction, and seed depth are also linked to plant developmental processes. As mentioned previously, adequate oxygen supply is required to drive plant growth, water logging conditions deprive the growing embryo of oxygen, resulting in death of the young seedling. Soil crusting mechanically impedes emergence, and in some instances, the hypocotyl will snap as it attempts to pull the cotyledons through the crust (Image 1C). Soil crusting issues can be resolved by running a rotary hoe over the field to facilitate emergence. At the opposite extreme, poor seed-to-soil contact and a lack of mechanical pressure against the seed and developing seedling may

not provide enough resistance to remove the seed coat as the seedling moves through the soil profile. As a result, the seed coat may prevent the unfolding of the cotyledons. Regarding seed depth, seeds planted shallower than those noted above will be more prone to drying out following germination, whereas seeds planted too deep may utilize their energy reserves prior to emergence, limiting stand establishment. Growers should target a final plant stand of at least 1.5 plants per row ft. and should adjust seeding rates based on the germinability of their particular seed lot. Planter settings to optimize seed depth and seed-soil contact are discussed elsewhere in this newsletter.

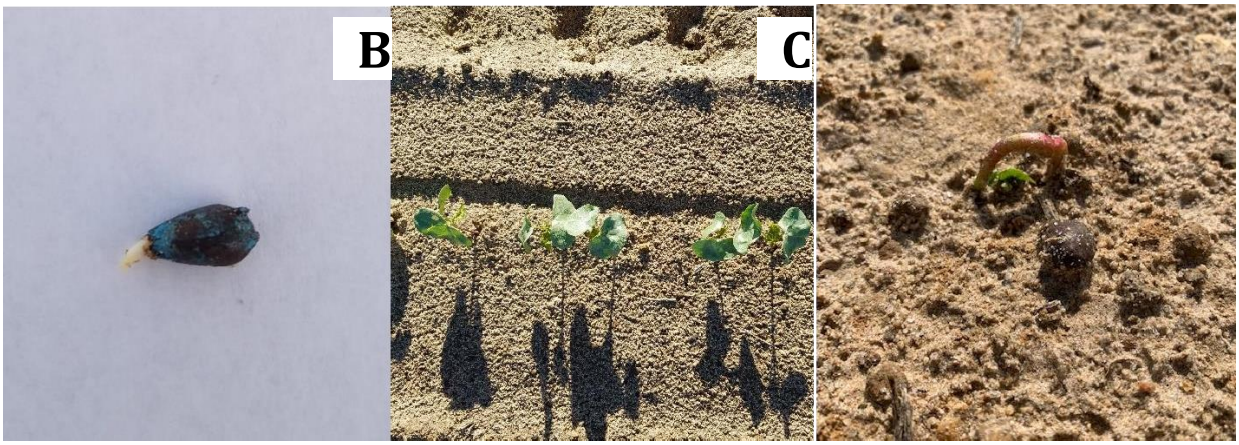


Image 1: The first visible structure out of the seed (radicle; A), emerged cotton seedlings (B), and soil crusting impeding emergence (C).

References

Hand, LC, Culpepper, S, Harris, G, Kemerait, B, Liu, Y, Perry, C, Hall, D, Porter, W, Roberts, P, Smith, A, Virk, S, Bag, S, Sintim, H. 2022. 2022 Georgia Cotton Production Guide. University of Georgia Extension. Annual Publication 124-2.

Control The Things You Can Control – Seeding Rates (*Camp Hand*): This past spring was my first on the road doing the county production meeting circuit, and it was a busy one. From mid-January to March 10 myself, representatives from the Cotton Commission, and members of the UGA Cotton Team did 49 meetings. In-person meetings are key to the success of the county delivery system, and sticking to the county delivery system is what has set UGA Extension as one of the best extension systems in the country. It was great to get back in person, and for me to be able to meet people as I enter my second year on the job.

One thing I talked about at every meeting was some of the wide-row research I did last year. The main goal (for most folks) in adopting this system is the potential for reducing input costs – namely seed costs. In our study here in Tifton, we reduced our seed cost 40 and 50% when we went from 36-inch rows to our wider 60- or 72-inch rows, respectively. We also saw yield reductions of 200 to 500 lbs. of lint per acre when we went to wider row spacings. So my message this winter was that I'm not sure there's a fit in

Georgia for this system on a lot of acres. After I got done talking about this, the follow up question was inevitably, “Well what if we keep the same row spacing but reduce our seeding rates?” Fantastic question.

One of my good friends likes to remind me, “Anybody can plant cotton, but can’t everybody get a stand.” This is a complex conversation, and lots of factors go into getting a stand. The first and likely most important factor is the environmental conditions at and after planting. We have got to have ideal temperatures and moisture to ensure the seed we put in the ground germinates and emerges. A fantastic resource to assist in the planting decision is the Planting Conditions Calculator, provided online by NC State at this link: https://products.climate.ncsu.edu/ag/cotton-planting/. You can select an area near your farm and this tool will use the 7-day weather forecast to determine the planting conditions based on degree day accumulation and rainfall. Luckily, we have a wider planting window than many of our friends in other cotton producing areas. In some places, the planting window is realistically 10 days, while here we could start in April and plant into June. Hopefully at some point during our wider planting window, mother nature will cooperate!

Another consideration is the quality of the seed you put in the ground. The predominant way to predict seed quality is warm and cool germ. Warm germ is provided on the bag of seed, and cool germ is easily obtainable from the seed company or dealer. You could also get your seed tested through a service provided by the Department of Agriculture.

The frustrating part about the aforementioned factors associated with stand establishment is that they are largely out of our control. Of course we can’t control mother nature, but seed quality is largely determined prior to getting on the farm. Recent research has demonstrated that leaving seed in the sun for 6 hours or dropping it multiple times from seven feet high didn’t impact stand establishment or vigor. So, even being relatively harsh with the seed didn’t affect stand establishment. So why talk about the things we can’t control?

A sort of mantra for me lately has been “Control the things you can control”. So I like to talk about the things that we can’t control to reiterate that so many things can go wrong, let’s make sure the things we can control go right. First thing’s first: make sure your planter is dialed in and ready to go when you pull in the field. Our precision ag specialists, Drs. Wes Porter and Simer Virk developed a planter checklist to help with this and it can be found earlier in this newsletter.

The next thing you can control – and what I have been asked about most this year – is seeding rate. I have heard a lot of talk about reducing seeding rates this year, and some of that might be justified, but I have a few thoughts on this before we all start jumping on seeding rates of 20 thousand per acre.

The first thought is not every seed you put in the ground will emerge and contribute significantly to yield. Many of you reading this probably just said to yourself, “Duh!”, but I like to keep it simple. Keep in mind that generally, the past two seasons have been pretty good to us in terms of planting conditions. Nothing too crazy, and I didn’t hear a ton about replants due to inadequate initial stands (not talking about deer damage). I’ve gotten to help out with some seeding rate trials in a couple of counties (two studies in Colquitt County with Jeremy Kichler and three studies in Bleckley County with Cole Moon) throughout

the state, looking at seeding rates as low as 20 thousand per acre and as high as 45 thousand per acre. In three of those studies emergence was over 80%, and in all five locations emergence was over 70%. Overall, I would say that is pretty good. However, if you plant 20,000 seed per acre and only get 70% emergence/establishment, historically that is teetering on the edge of needing to replant (depending on the uniformity of the stand). The interesting data is what was seen on the return on investment once yield and quality were accounted for. The highest return on investment occurred when a seeding rate of 30,000 per acre was utilized (roughly 2 seed/ft). Averaged across the locations with more ideal stand establishment conditions, this resulted in a final plant stand of 1.7 plants per foot. In less ideal conditions the final plant stand was slightly less, 1.5 plants per foot. Historically, we know that maximum yields are attainable at a final stand of 1 plant per foot, **but the key is that stand has to be uniform!!!** We need to avoid large skips/gaps in stand. Uniformity is a large part of this conversation that is often left out.

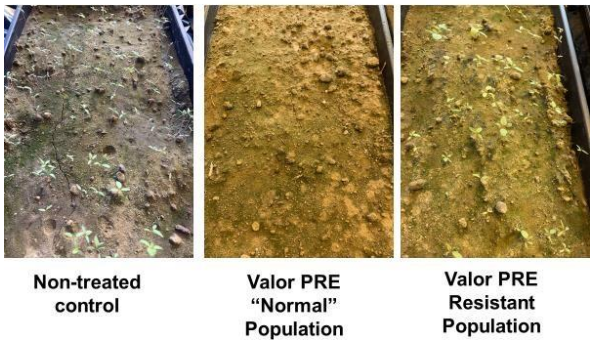
The second thought I have is about this year specifically. Inputs are high and it is something at the forefront of everyone's minds and a major part of the decisions that are being made for this season. Many people are probably thinking about reducing seeding rates to help save on these outrageous input costs. The question I will pose to you is this: **How much would it cost you to replant if you reduce your seeding rate and end up with a stand failure?** As mentioned earlier, a lot of things can go wrong when getting a stand. The weather might not cooperate, this might be the year you get "bad seed", or any other number of factors. Is this the year to find all that out? Probably not on a large basis. **Control the things you can control.** Put enough seed in the ground that you will be comfortable getting a stand the first go round (if everything goes right). The last thing you want to do is make an extra trip over the field that could've been prevented from the outset. If you don't get a good stand, all the other inputs (fertilizer, herbicides, etc.) aren't being used to their fullest potential and you might not be getting the best return on your investment. The first step to be successful in making cotton and covering costs this year is to get a stand. Everybody can plant cotton, but can't everybody get a stand. I hope everyone reading this gets a stand. If y'all have questions please don't hesitate to reach out to your local UGA County Extension Agent. We are all here to help!

Make Good Management Decisions or PPO Resistance in Palmer amaranth Could Spread Rapidly! (*Stanley Culpepper and Taylor Randell*): Over the past few years, our research has shown that a Palmer amaranth population collected in Georgia cannot be controlled with topical applications of PPO herbicides, such as Reflex, Cobra, and Blazer (Figures 1-3).

In 2022, research also confirmed this Georgia population of Palmer amaranth cannot be controlled with the residual activity of Reflex or Valor (Figure 4). The level of resistance is expected to exceed 15X for both of these herbicides.

Although herbicide shortages and price increases are challenging a farmer's sanity this year (more than normal), we must continue to make intelligent decisions while managing the most problematic weedy pest in the history of Georgia agriculture. Research conducted for well over a decade continues to suggest that the basic concepts of a sound diversified cotton weed management program are essential for long-term sustainability.

Figure 4. Palmer Response to Valor PRE.



1. Use tillage or cover crops to reduce weed exposure to herbicides (selection pressure).
2. No Palmer amaranth emerged at planting (cover crops, tillage, burndown).
3. Two residual herbicides both effective on Palmer amaranth applied at planting.
4. Timely POST herbicide tank mix applications….sequential applications!.
5. Layby directed or hooded application to finish out the crop.
6. Remove escapes before seed production.

Silverleaf Whitefly Update (*Phillip Roberts*): Silverleaf whitefly (SLWF) is a sporadic and often localized insect pest of cotton in Georgia. Infestations are most common in areas where both cotton and vegetable production occur. More detailed information on SLWF biology and ecology in Georgia and area-wide management can be found in the publication "*Cross-Commodity Management of Silverleaf Whitefly in Georgia*" (https://secure.caes.uga.edu/extension/publications/files/pdf/C%201141_1.PDF).

There are several risk factors influencing SLWF populations during the year. One important factor is winter weather. SLWF survive the winter months on both cultivated and wild host plants. Mild winters favor survival of SLWF. Although temperatures are rarely low enough in South Georgia to kill SLWF outright, freezing temperatures which kill host plants infested with immature SLWF effectively kills immature SLWF on those plants.

Table 1. Cumulative 11.1°C degree days (SLWF Degree Days) and days below 32°F in Tifton Georgia from November 1 thru March 31 for crop years 2004-2021 and percent SLWF infested and treated acres in Georgia cotton. Years above the 2004-2021 mean for Cumulative 11.1°C DDs and years below the mean days below 32°F are highlighted in yellow.

Crop Year	Cumulative 11.1°C DDs (Nov 1-Mar 31)	Days<32°F (Nov 1-Mar 31)	% SLWF Infested Acres	% SLWF Treated Acres
2004-2021 mean	*476*	*17*	*15*	*7*
2004	421	20	1	0
2005	469	17	2	0
2006	453	24	2	0
2007	509	13	10	4
2008	430	14	5	1
2009	446	22	5	1
2010	251	26	4	0
2011	403	32	2	1
2012	630	11	20	10
2013	377	13	12	7
2014	380	21	10	1
2015	352	14	0	0
2016	616	16	20	9
2017	676	6	85	70
2018	526	20	20	2
2019	496	8	30	6
2020	589	6	40	22
2021	546	16	7	0.5
2022	562	9	?	?

Cold temperatures slow development and population buildup of SLWF. We can calculate SLWF degree days in a similar fashion as we calculate DD60s to estimate cotton growth and development. For SLWF we use a minimum temperature of 11.1°C or 52°F. SLWF complete a generation in 312 11.1°C DDs. SLWF populations grow exponentially with each generation, in general the more generations the more SLWF. I have received several questions regarding SLWF for the 2022 cotton crop. Many factors between now and harvest can influence SLWF infestations. For example, hot and dry conditions favor SLWF reproduction and survival. Very frequent rainfall during the summer of 2021 was not conducive for SLWF reproduction and survival. So where are we today in terms of weather compared with previous years.

SLWF and Weather: Since November 1, 2021, we have accumulated 562 SLWF DDs which is above the 2004-2021 average of 476 SLWF DDs (Table 1). It should be noted that the four crop years (2012, 2016, 2017, and 2020) with the highest accumulated SLWF DDs are the same four years with the highest percent of SLWF treated acres. Number of days below freezing since November 1, 2021 is 9 which is below the average of 17. This is just weather data but it does indicate that **winter and early spring temperatures were above average and suggest that our risk for SLWF in 2022 is elevated**.

SLWF Traps: We have been monitoring yellow sticky traps for SLWF at 20 locations since January 1, 2022. To date in 2022, SLWF captures have averaged 1.85 per location per week compared with 0.48 SLWF during the same time period in 2021. Interestingly, mean trap captures have ranged from 0.08 to 9.32. So SLWF have been captured at all locations and captures are consistently higher in some locations likely due to a source of SLWF (i.e. SLWF reproductive host plants). We will continue to monitor traps each week and post periodically on ugacotton.com.

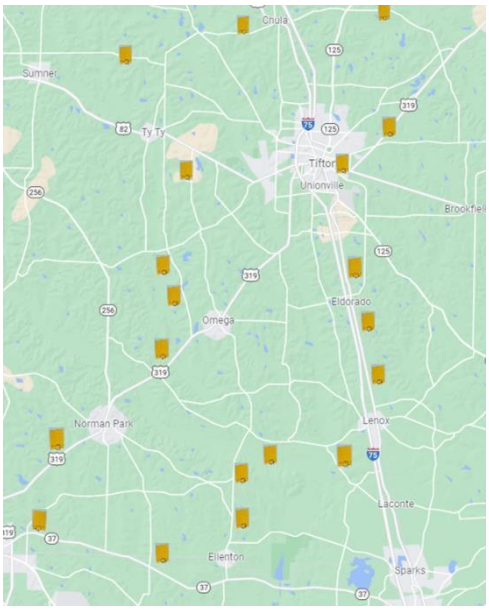


Figure 1. Silverleaf whitefly trapping locations.

SLWF Observations: Reports from county agents and consultants are that SLWF populations are low in vegetable crops at this time. As I mentioned earlier, a lot can happen in the coming weeks in terms of SLWF infestations in cotton.

Weather conditions during Spring and summer will be the primary factor affecting SLWF populations from this point forward. Hot and dry conditions will favor SLWF population buildup. If you are in an area prone to have SLWF, NOW is the time to manage risk factors we can control (Figure 2).

As we prepare to plant, attempts should be made to minimize overall risk of SLWF. Decisions now could greatly influence SLWF infestations later in the summer.

1. Location: Crops produced in a given area can be viewed as sources and sinks for SLWF populations. Spring vegetable and melon crops are a source of SLWF infesting cotton. In the fall cotton is a source of SLWF infesting fall vegetables. The nearness of cotton to a SLWF infested field increases the risk of SLWF. Minimize planting cotton next to SLWF infested crops. If planting cotton near SLWF infested crops, be sure to avoid late planting and use a smooth leaf variety. Destroy SLWF host crops immediately after harvest; this includes vegetable and melon crops in the spring and cotton (timely defoliation and harvest) and other crops in the fall. Historically SLWF infestations are greatest in areas which produce both vegetables and cotton. Several vegetable crops and melons may be a potential source of SLWF. In all crops, including cotton, fields should be immediately destroyed to eliminate potential SLWF reproduction.

2. Planting Date: the risk of SLWF problems increases as planting dates are delayed. SLWF complete a generation in about 2 weeks during summer months and populations can increase rapidly. The impact of SLWF on yield is dependent on the growth stage of cotton when SLWF infest the crop. Potential yield loss is greater when infestations appear during squaring or early bloom compared with late bloom. The duration or time of control required to protect yield and quality from SLWF is also dependent upon planting date. April and early May planted cotton is at lower risk for SLWF problems compared with late May and June planted cotton. Bottom line is to avoid late planting.

3. Variety Selection: SLWF prefer hairy cotton compared with smooth cottons. There is a direct correlation of SLWF infestations in cotton based on the degree of leaf hairiness. Avoid hairy cottons especially if planting near a source of SLWF or if planting late.

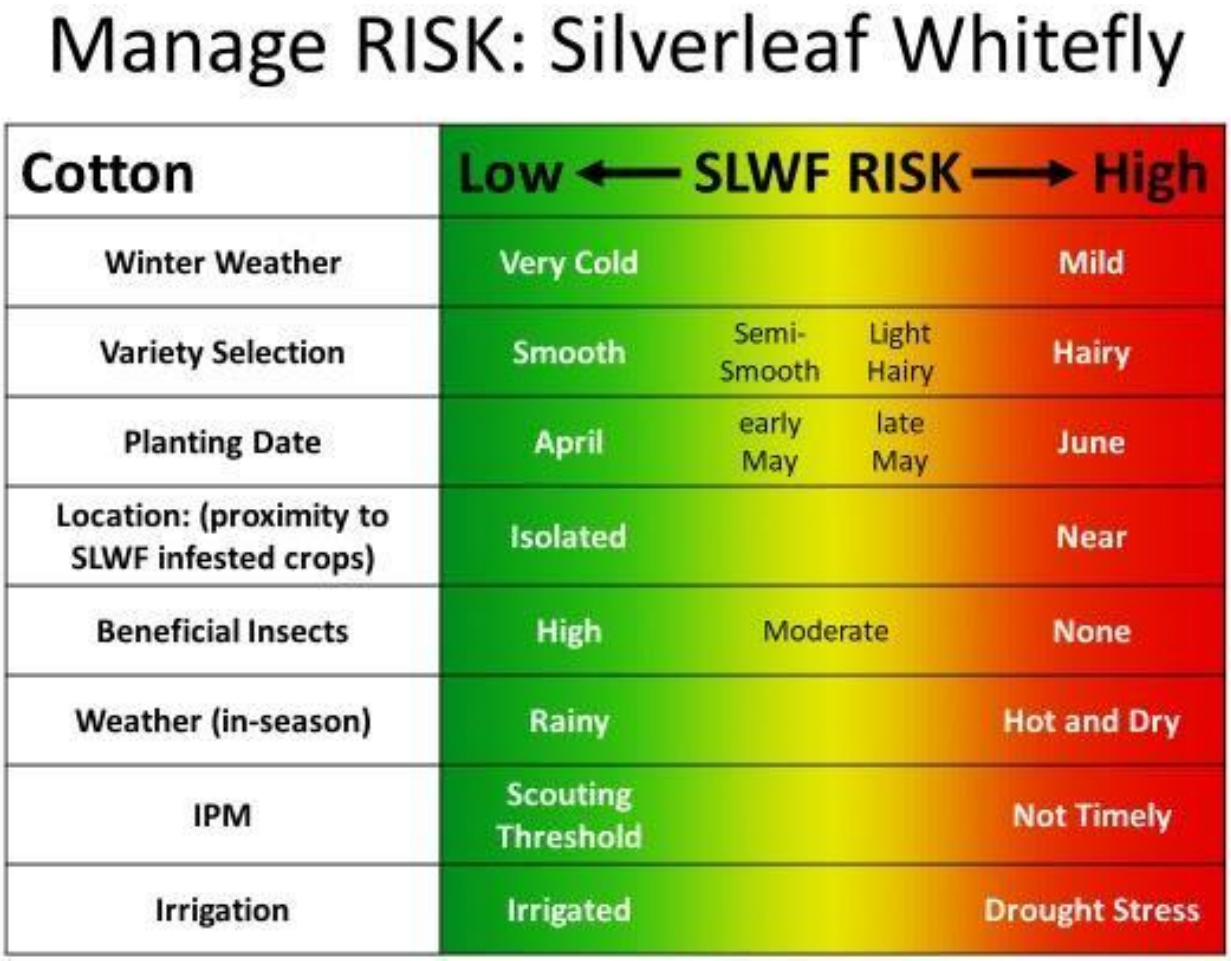


Figure 2. Silverleaf whitefly risk factors in cotton.

Georgia Grain News 4-15-22

White Wheat Grain Heads

There are at least 3 reasons why we are seeing some white wheat grain heads in the field this week : insects, freeze damage, fusarium head blight.

Insects:

Cody Bowling, Seminole County Agent, and Dr David Buntin, UGA Entomologist helped solve this white head mystery where several were seen near the field edge in Seminole county.

These were caused by insect feeding on the stem, cutting off photosynthate and nutrient and water access to the head and it turns white. Cody used a sweep net to find the adult culprits: Wheat Stem maggots that he said would lay the eggs that would hatch into the larva or maggot, since it’s a fly, that would feed into the stem. He says the feeding occurs just above a plant node.

Below is Cody Bowling identifying the Wheat stem Maggot flies. And a closeup of a couple that he found near damage in the field with a sweepnet, with a truck key for size comparison.

Dr. Buntin says this is very rarely an economic problem but more of a curiosity and grasshoppers and caterpillars can sometimes cause similar damage.

Freeze damage:

The white heads below were empty as a result of the March 13 freeze, fortunately they were a small percentage of this field.

Disease:

Fusarium Head Blight aka Scab can cause white heads as below, often you can later dig into the head and see shriveled kernels with pinkish appearance as in the 2nd photo on the right.

And often part of head affected but with Stem Maggot the whole head will be white. With freeze damage you can also see partial head whiteness but it will almost always be the top of the head affected due to the top being exposed to the cold first, if the grain head is not entirely come out of the boot stage.

More on Wheat diseases

Dr. Alfredo Martinez, UGA Plant Pathology and I have been getting questions about timing of Fusarium fungicide spray and it is important to spray **while the wheat is flowering** which occurs not long after heading but requires checking the field. You can see the anthers coming out in the below photo from Purdue University. Dr Martinez has the fungicides and rates in the pest management handbook and these fungicides are also effective on Leaf rust as well.

Here's a link to our UGA Fusarium publication ,but the list of chemistries here is outdated. https://extension.uga.edu/publications/detail.html?number=C1066&title=Identification%20and%20Control%20of%20Fusarium%20Head%20Blight%20(Scab)%20of%20Wheat%20in%20Georgia

Here's a photo below by Agent Cole Moon of Bleckley county, where he dug into the recently emerged wheat head and you can see the flower parts not yet coming out so this is a good example of being a little early for the fungicide spray.

Wheat leaf rust is coming on now as well. Agent Cody Powell and I found this in Miller county on the lower leaves this week in a field that was recently sprayed so that will protect the all important flag leaf which provides most of the photosynthate to the grain.

Georgia Grain News 4-8-22

Agents,

We are working on completing the revised Soybean Production guide for 2022.

I wanted to go ahead and forward part of **Dr. Eric Prostko's** , Weed Section for Soybeans as it has lots of up to date and pertinent information concerning herbicide use systems including info about more **space needed in counties with endangered plant species**!

Enlist™ Soybean Production Systems (2,4-D Choline Tolerant Soybeans)

Corteva™ Agriscience (formerly DowAgroSciences) has developed soybeans that are tolerant to glyphosate, 2,4-D choline, and glufosinate (Liberty). Collectively, the trait and herbicides are marketed as the Enlist™ Weed Control System. Deregulation of the Enlist™ soybean trait occurred in September of 2014. **Enlist Duo®** herbicide (glyphosate + 2,4-D choline) was registered in October 2014. **Enlist One®** (2,4-D choline) was registered in September 2017. China approved the import of Enlist™ soybeans in January 2019. Enlist Duo® and Enlist One® have numerous requirements for application including but not limited to the following:

1) Only for use on Enlist E3™ soybean varieties.
2) Apply POST in soybeans no later than the R1 or full flowering stage. A total of 2 POST applications can be made (12 days apart)
3) Only used approved tank-mixes and nozzles.
4) Clean sprayer before using Enlist™ herbicides to avoid contamination from a previous application.
5) Apply Enlist™ herbicides when wind speed is between 3 MPH and 10 MPH. Do not apply if wind speeds are greater than 15 MPH.
6) Do not spray Enlist™ herbicides during a temperature inversion.
7) Must maintain a 30' foot downwind buffer from any area except a) roads, paved, or gravel surfaces; b) planted agricultural fields except those listed as susceptible; c) agricultural fields that have been prepared for planting; and d) areas covered by the footprint of a building, shade house, greenhouse, silo, feed crib, or other man-made structures with walls and/or a roof.
8) Do not spray if wind is blowing towards susceptible crops including tomatoes (EPA crop group 8), cucurbits (EPA crop group 9), grapes, and non-tolerant cotton.

9) Use a minimum of 10 GPA (15 GPA is preferred).
10) Apply either 4.75 pts/A of Enlist Duo® or 2 pts/A of Enlist One®. ***Enlist Duo is not labeled for use in the following counties: Baker, Berrien, Brooks, Burke, Calhoun, Early, Irwin, Lee, Miller, Screven, and Worth.***
11) Follow Corteva™ labeled/recommended sprayer cleanout procedures (including triple-rinsing).
12) The certified applicator applying this product on soybeans must attend UGA's Using Pesticides Wisely (UPW) training.

For more complete information about application requirements, tank-mixes, nozzle types, etc. for the Enlist™ Weed Control System, please refer to the following web-site:

https://www.enlist.com/en.html

*****It is illegal to apply older formulations of 2,4-D amine or ester (i.e. Weedar 64 or Weedone, etc.) to 2,4-D-tolerant soybeans.*** It is also very important to note that Enlist™ soybean variety performance data for the Southeast is very limited at this time.

Xtend™ Soybean Production Systems (Dicamba-Tolerant Soybeans)

Soybean varieties that are tolerant to both glyphosate and dicamba have been developed. Collectively, the trait and herbicides are marketed as the Roundup Ready® Xtend® Crop System. Currently, 3 low-volatile formulations of dicamba are labeled for use in this system including Xtendimax® with Vapor Grip®, Engenia™, and Tavium® Plus Vapor Grip®. Tavium is a pre-mixture of dicamba + *s*-metolachlor. ***It is illegal to apply non-labeled formulations of dicamba (i.e. Banvel, Clarity, Rifle, Sterling Blue, etc.) on dicamba-tolerant soybeans!!!!***

Xtendimax®, Engenia®, and Tavium®, are ***restricted use pesticides*** and their labels have numerous requirements for application including but not limited to the following:

1) Can only be used on Roundup Ready 2 Xtend® or XtendFlex® soybean varieties.
2) Can only be ***purchased*** and ***applied*** by certified pesticide applicators.
3) Can be applied preemergence and/or postemergence (R1) but no later than June 30. Only 2 POST applications of Xtendimax or Engenia can be made in soybeans (7 days apart). Only 1 POST application of Tavium is permitted.
4) Can only be tank-mixed with products that have been tested and found not to adversely influence off-site movement potential. Check the following web-sites for a current list of approved tank-mixes and all other requirements:
    a: Xtendimax: www.XtendiMaxApplicationRequirements.com

    b: Engenia: https://www.engeniaherbicide.com/

c: Tavium: https://www.syngenta-us.com/herbicides/tavium-application-stewardship

5) Cannot be tank-mixed with AMS or UAN.
6) Can only be applied using specific nozzles. Refer to above web-sites for current list of approved nozzles.
7) Must be applied in minimum of 15 GPA.
8) Application speeds cannot exceed 15 MPH.
9) Maximum boom height of 24".
10) Cannot be applied when wind speeds are < 3 MPH or > 10 MPH.
11) Can only be applied between 1 hour after sunrise to 2 hours before sunset.
12) Must include an approved drift reduction adjuvant (DRA) and a volatility reducing agent (VRA) with Xtendimax and Tavium. An approved DRA + pH buffering adjuvant (PHBA) is required with Engenia.
13) Must maintain a 240' downwind buffer for all applications. In counties with endangered dicot species, must maintain a 310' downwind buffer + a 57' omni-directional buffer around other sides of a field. More information about endangered species in Georgia counties can be obtained at the following web-sites:
    a. **Bulletins Live! Two**: https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins
14) Cannot be applied when wind is blowing toward sensitive crops/residential areas including but not limited to non-dicamba tolerant

cotton/soybean, tobacco, peanut, tomatoes and other fruiting vegetables (EPA Crop Group 8), cucurbits (EPA Crop Group 9), ornamentals, fruit trees, and grapes.

15) Specific application records must be generated with ***72 hours*** of application and kept for a minimum of ***2 years***. Refer to product labels.

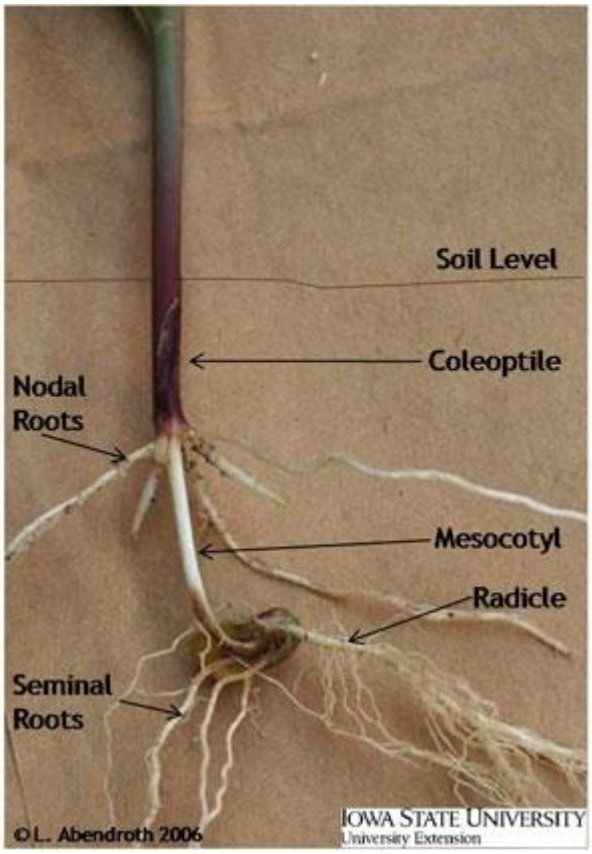
16) All growers/applicators who intend to apply Xtendimax®, Engenia®, and Tavium® in soybeans in 2022 must have attended UGA's *"Using Pesticides Wisely*" training program.

XtendFlex® Soybean Systems

In September 2020, full approval was granted for XtendFlex® soybean varieties in the U.S. XtendFlex® soybean varieties are tolerant of glyphosate, dicamba, and glufosinate. Dicamba and glufosinate should not be tank-mixed. Xtend® varieties are ***NOT*** tolerant of glufosinate. The tank-mixture of glyphosate + glufosinate has been shown to be antagonistic (i.e. reduced control) on certain weeds in some research and has not been adequately evaluated for XtendFlex® soybeans in Georgia at this time.

Soybean variety performance data for Georgia can be obtained from the UGA Variety Testing Program (https://swvt.uga.edu/)

can see that I was pointing to the nodal roots, these are the crown roots . Then you can see below the mesocotyl, the seminal, from the seed, roots.



Here's a link where you can learn more concerning corn roots from Purdue University, https://www.agry.purdue.edu/ext/corn/news/timeless/Roots.html

This week I found these in a wheat field what are they and are they good , bad, or ugly?

Freeze damage is becoming more apparent in wheat now. White empty heads.

Rome Ethredge: now

Freeze damage in wheat.

Cold Damage

Corn. Several hundred acres has been replanted of corn that was planted very early and freeze damage and subsequent slow recovery or plant death and new growth getting caught in the whorl delayed regrowth. Most field corn in Georgia that was planted and up, survived the cold and although not looking great yet, is slowly recovering.

Some plants were lost in many fields but if plant population was good, going in, that really helped. In cases where plant population was already marginal there were some problems. It has been a hard life for it however with packing rains and high winds and blowing sand. Photo below left is a field that had to be replanted. Plant to right is a field that was 13 days old and looked dead after the freeze but has mostly recovered, but we lost a few plants. The exposed leaves were killed and so you can see the collar where 2 leaves were, so if wanting to get a plant growth stage you'll need to consider that 2 leaves are gone, so this plant would be V4 instead of what looks like V2. Dewey Lee of the Ga Corn Commission, discuses this in a recent Blog post here:

https://georgiacorngrowersblog.com/2022/03/26/a-good-reason-to-know-corn-physiology%ef%bf%bc/

Small Grains for Grain.

Small grains planted for grain too early, were adversely affected by the March 13 and 14 freeze event, mostly just those plants that were already heading. Many heads are white , see below photo shared with me by Scott Brown, and yield is affected in those early heading fields.

Most fields across the state are ok however. Some fields show some heads that had emerged early are affected and now white and no or little grain will be in those. In some fields the flag or top leaf was burned by the cold and as it contributes 65% of the photosynthate the grain gets, this can be a problem and will limit yield if widespread in the field.

We can often get away with planting for grain early but this wasn't the year for that.

Here’s an excerpt from The UGA Wheat Production Guide.
https://grains.caes.uga.edu/content/dam/caes-subsite/grains/docs/wheat/Wheat-Production-Guide-2021.pdf

Table 2. General planting windows for most wheat varieties grown in Georgia by Region

Region	Planting Period
Mountain, Limestone Valley	October 10 – November 1
Piedmont	October 25 – November 15
Upper & Middle Coastal Plain	November 7 – December 1
Lower Coastal Plain	November 15 – December 1
Lower Coastal Plain**	December 1 – December 15

** Only varieties with short vernalization requirements

The optimum window for wheat planting in Georgia is typically within one week before or after the average first frost date for a given region. Planting during the appropriate time for your area will allow wheat to develop enough tillers prior to January or early February which reduces the likelihood of needing two applications of N fertilizer in the spring. Fall produced tillers will have stronger root systems, tolerate more stress, and produce larger heads with greater potential for high test weight. **Studies show that fall tillers account for about 85% of total yield.** If the crop is planted late and plants do not tiller well prior to the onset of winter days, then the crop will be dependent on spring tillers. Spring tillers generally have smaller heads, fewer spikelets, and less opportunity to produce grain. Planting on-time ensures the best chance to obtain the proper number of tillers by GS 30 or stem elongation. High yield wheat requires about 100 tillers per square foot at GS 30. If your stand has fewer tillers at GS 25 (i.e. 50-60 per square foot) then early N applications will be needed to support additional tiller production (additional information in fertility section).

Corn Stand Evaluation

An important part of stand evaluation is seeing how many plants you have up and growing, per acre. You also want to watch for large gaps or spacings down the row. Plants coming up late is also something to consider. One reason for doing this if for determining if replant is needed or if the stand is kept, if inputs or yield goal needs to be adjusted and also to see if planter adjustment work needs to be done before its used again.

I like to use the "1000th of an Acre method". You count the plants in a designated distance down the row in several representative spots in the field. This distance will depend on the row spacing. See in the chart below the different distances for common corn row spacings. I carry a strap with me where I have marked the

distances for 36,30 and the total length of my strap works for 20 inch rows. See below my photos for checking 36 inch row corn. I counted 32,31,33,32,31 and 33 in my counts so we got 32,000 plants for an average in this irrigated field. Any strap or rope you use needs to be checked periodically to make sure the length doesn't change through stretch or shrink.

Table 1. Row length for 1/1,000th acre based on row width[1].

Row Width (inches)	Row Length 1/1,000th acre (feet, inches)
20	26' 2"
30	17' 5"
36	14' 6"
38	13' 9"

Hard Packed Soil

Its important to keep a check on corn that is soon to emerge in irrigated fields to make sure you don't have a hard surface soil layer. Press down with your finger in the row to see how hard the surface is and if you struggle to penetrate the ground there may be trouble getting corn up evenly and quickly. This week I have seen this problem in many fields.

Recent packing rains and then bright sunny warm days and drying winds make this problem worse. Often its more of a problem in more heavily textured soils. A light timely irrigation will help get the corn up in most cases, but timing is important and we really need to avoid the unfurling beneath the soil surface as seen below in one photo. Often what we see is the crooking, twisting and swelling like in the second photo.

The best thing to do is to check fields closely that are just beginning to come up. When surveying corn that is needling through if you see any gaps in the plant population dig those spots to see what the problem is. Especially when shooting for high yields we need good even corn emergence.

Empyros™ Herbicides for Field Corn? (Prostko)

I received a few questions about "new" corn herbicides being sold by Helena® under the trade name of Empyros™. Here is some information for you in case you get asked questions:

1) There are three different products being sold under that brand name. I was under the impression that only the Empyros™ formulation would be sold in the south but I could be wrong on that one.

2) Last year was the first time that I had the opportunity to evaluate these specific pre-mixes. Generally, they performed very well but I only have 1 year of data. I just planted another test on Monday (03/28/22) to get another look. Check out these field pictures from 2021:

3) For more information, check out the product labels:

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

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

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

4) The active ingredient, tolpyralate, is also sold under the trade name of **Shieldex® 400SC** from SummitAgro™USA. After collecting multiple years of data, Shieldex® was added to the "official" field corn weed control recommendations in the 2022 UGA Pest Control Handbook Vol. 1 (page 69). Check out this field picture from 2021:

5) A copy of the Shieldex® label:

https://s3-us-west-1.amazonaws.com/agrian-cg-fs1-production/pdfs/SHIELDEX_400SC2k_Label.pdf

6) Tolpyralate is a WSSA Group 27 herbicide (HPPD inhibitor) thus is very similar to other actives in this group such as tembotrione (**Laudis**®), mesotrione (**Callisto**®), and topramezone (**Impact**®).

Irrigation System Prep and Early Season Water Requirements for Peanut Production By Wesley Porter, Extension Precision Ag and Irrigation Specialist, UGA David Hall, Extension Water Educator, UGA Jason Mallard, Extension Water Agent, UGA

We are moving into the time when peanut planting is beginning, countless hours and many dollars have been spent on tillage, spraying and planting equipment to be prepared for another year. However, make sure that you do not overlook one of your largest investments and one that is just as important as any other, your irrigation systems. Now is an optimal time, if you have not already done so, to do routine and preventative maintenance on your irrigation systems to ensure they are in top shape. There are two important actions that need to be performed before you begin planting your peanuts. The first one is an overall irrigation system check and the second is specifically focusing on water application uniformity of your system. First look up the Spring Center Pivot and Lateral Irrigation System Preparation | UGA Cooperative Extension (B1452) and go through the checklist that includes all main components on your irrigation system to ensure that they are working properly. Some of these components can include but are not limited to the power unit, pumping system, pipes and drains, electrical systems (which includes cellular connections for

remote monitoring and GPS), safeties, tires, gear box oil level and leaks, and the switches on the auto stop feature. Once you have checked all of these components, start the irrigation system and finish checking components by documenting any clogged or partially clogged nozzles along with any visible leaks. Also, check the line pressure, flow, sprinklers, end gun arc travel and booster pump operation. A reduction in pressure and GPM from last year or brass and excessive sand in the trap may be a good indication of potential well issues. An example of the system flowrate and application rate for a center-pivot irrigation system is represented in Figure 1. It is important to remember that due to increasing travel speed as we move towards the end of the pivot, the system flow rate (represented as dashed black line) will go up, but the application depth (represented as solid blue line) should remain consistent. This is achieved with properly sized sprinkler packages.

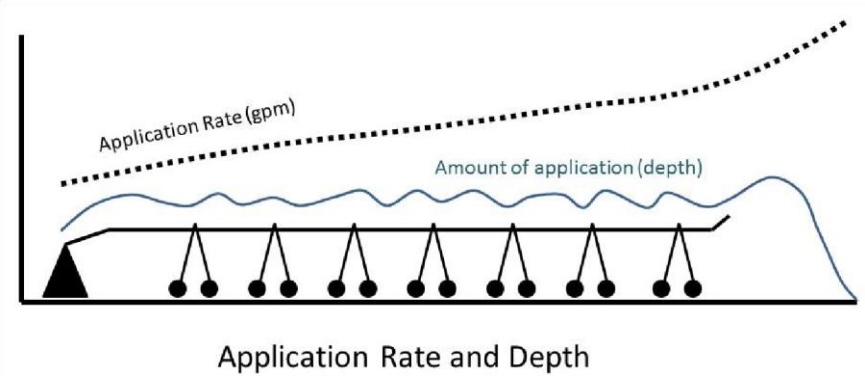


Figure 1. Application rate and depth across a pivot tower.

It is important to note that it can be very difficult to detect differences between individual sprinklers and banks of sprinklers on a pivot visually so it is strongly recommended that an application uniformity test be performed on the center pivot to detect any discrepancies along the tower length. A UGA Factsheet titled Evaluating and Interpreting Application Uniformity of Center Pivot Irrigation Systems | UGA Cooperative Extension (C911) is a very good step by step guide to accomplish this process. If you need any further guidance on either of these, or have interest in having an on-farm uniformity test performed, contact your UGA County Extension Agent and they can help get the process started. By following these suggestions, you should have a properly operating pivot ready to go for the upcoming production season.

Once you have the pivot up and running and are confident that it is adequately applying water uniformly with no problems, it is time to start thinking about water requirements for your crops. It's important that you keep an eye on the current weather and soil moisture conditions as you begin planting crops, in conjunction with the extended forecast. Peanuts typically do not require a lot of water in the first month after planting as exhibited by the yellow box and water use curve below. However, if it gets hot and dry again you may need to apply a few small irrigation applications. The yellow box below represents the first five weeks after planting of peanut water requirements. Keep a track of rainfall and temperature, your irrigation efficiency (typically around 65-70% for high pressure systems and 80-90% for low pressure systems), and make irrigation applications accordingly. Keep in mind that the water requirement below is irrigation plus rainfall, and the weekly water requirement recommendation was developed based on a historical average of evapotranspiration. Thus, your actual water/irrigation requirement may vary slightly based on weather conditions and rainfall during the growing season. For a more in-depth irrigation recommendation it is suggested that you look into implementing either a computer scheduling model either online or via a Smartphone App, or soil moisture sensors. An additional option is the utilization of USDA-ARS's Irrigator Pro, recent research (Table 1) has shown that the utilization of either sensors or Irrigator Pro maximize Irrigation Water Use Efficiency and yield when

compared to other irrigation scheduling methods. For more information about either of these contact your local county Extension Agent.

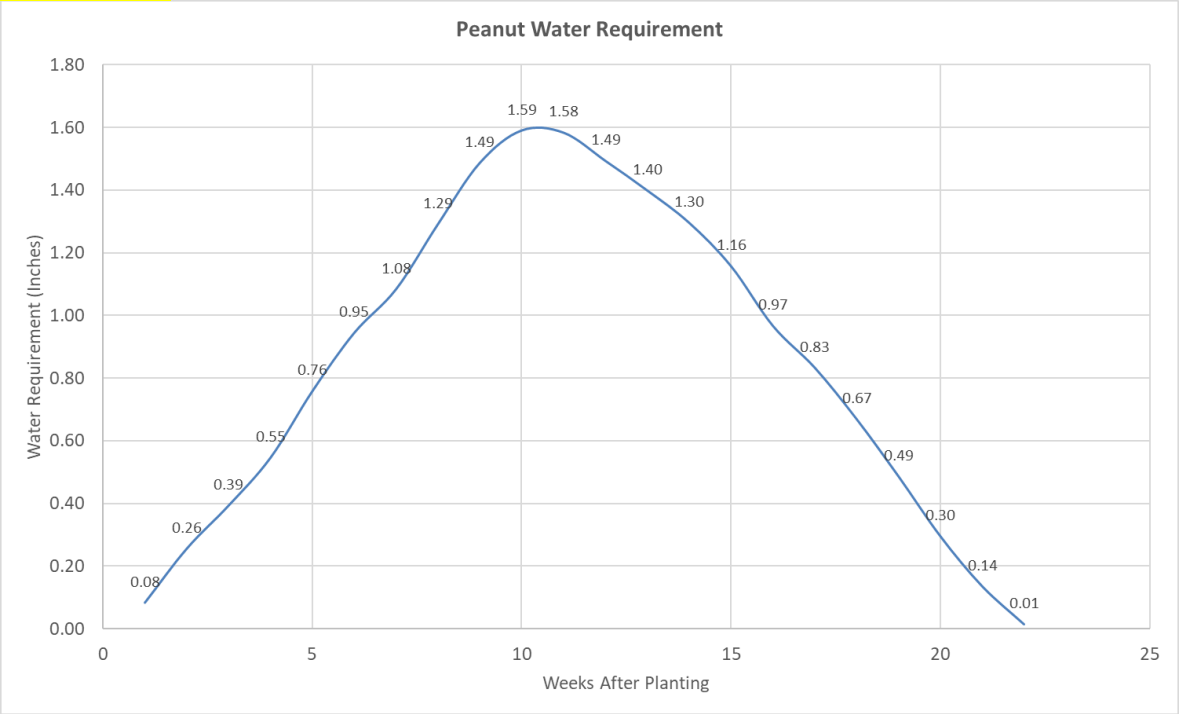


Figure 2. Seasonal Peanut Water Requirement.

UGA Extension's peanut irrigation checkbook, like for most crops, recommends very little water once the stand is established. Once the planters start rolling, farmers continue to plant as fast as possible while sufficient moisture is present to ensure a good germination and stand. Once moisture begins to leave the optimum planting level, plan your planting schedule around an irrigation event the day before planting, if available. Keep in mind, you will want to be

planting the next day after an irrigation event to optimize the moisture. In doing this, careful consideration to the amount of water applied must be considered using such factors as available moisture, soil type and projected weather. There is a fine line between not being able to reap the benefits of irrigation by not applying enough water or having to wait an extra day to dry out, costing time and money. If a rain event is not expected within 4-5 days of planting, another irrigation application will be necessary to incorporate and activate pre-emergent applied herbicides. Most labeled herbicides recommend around 0.5 inches of rainfall or irrigation. During extremely hot and dry weather, this post planting irrigation application can provide benefits in establishing a good start to peanut production; assisting with germination, activation of pre-emergent herbicides, keeping soil surface temperatures cooler and if soil surfaces have crusted, making it easier for peanut plants to break through for less vigorous seed. Having good soil moisture will help tremendously with keeping soil temperatures cooler and ultimately reducing the chances of aspergillus crown rot disease losses and other diseases in peanut plants.

UGA Extension has developed a quick and easy irrigation scheduling guide that is laminated and contains the four major row crops grown in Georgia. Please check with you local Extension Agent for availability.
The guide can also be downloaded at Irrigation Reference Guide for Corn, Cotton, Peanuts, and Soybeans | UGA Cooperative Extension

Table 1. Results from Peanut Irrigation Scheduling Studies during 2017 and 2018.

Irrigation Scheduling Method	Irrigation Amount (in)	Total Water (in)	Yield (lb/ac)
2017 Rainfall: 24.30			
Dryland	1.00	25.30	**5875**
WaterMark (45 kPa)	2.85	27.15	**6396**
PeanutFARM	5.50	29.80	**5936**
Irrigator Pro	4.00	28.30	**6260**
50% Checkbook	6.75	31.05	**6262**
Checkbook	10.50	34.80	**5749**
EasyPan	4.75	29.05	**5979**
2018 Rainfall: 32.43			
Dryland	2.50	34.93	**5591**
WaterMark (45 kPa)	2.50	34.93	**5849**
Old Checkbook	7.80	40.18	**6204**
New Checkbook	6.70	39.13	**6147**
50% New Checkbook	4.00	36.45	**6231**
Irrigator Pro (Soil Temp)	6.30	38.68	**5996**
Irrigator Pro (Sensor)	3.30	35.68	**6433**
PeanutFARM	4.80	37.18	**5984**

Planter Preparation By Simerjeet Virk, Extension Precision Ag Specialist, UGA & Wesley Porter, Extension Precision Ag and Irrigation Specialist, UGA

There are few more weeks until peanut planting begins across the state (at the time this was written), so this is a perfect time for growers to start checking their planters and perform any required maintenance to ensure they are ready for the field. While some of the planters may have already been used to plant corn, it's important to note some significant changes in settings to ensure accurate metering and seed placement for peanut. Planter malfunctions in the field or mistakes at planting can become costly, especially with the input prices this year so it is important to ensure that the planters are dialed in for peak performance. A planter checklist is available here Planter Checklist (UGA) for growers to utilize and go thoroughly over the planter to check if any parts need replacement or adjustment before heading to the field. When growers get in the field, it is also important that they get out of the tractor during first few passes and check seed depth and spacing behind the planter to check if everything is setup and functioning properly for the given field conditions. Here are few other key points to consider related to planter setup and performing in-field checks when planting peanuts:

1. **Seed depth** – Recommended seed depth for planting peanut is 2.0 to 2.5 inches. Verify seed depth before planting both on a hard surface and in the field. Mechanical seed depth settings can vary among the row-units on the same planter so take the time to check planted seed depth for each row-unit and make necessary adjustments.

2. **Downforce** – Proper planter downforce is important to achieve target seeding depth so make sure the downforce system (whether utilizing mechanical or active system) is set to apply adequate downforce on each row-unit. A downforce of 100 to 200 lbf is generally considered adequate for planting peanuts. Remember these downforce requirements can vary with soil type, texture and moisture so make sure to make those adjustments as field conditions change from one field to another or within the same field.

3. **Seeding Rate** – Recommended seeding rate for peanuts is 6 to 7 seed/ft, which is higher than the nominal seeding rates for corn and cotton (2 to 3 seed/ft) and requires seed meter to singulate seeds at considerably higher speed (rpm) even at normal planting speeds. Therefore, it is important to ensure that the seed meter is setup and functioning correctly to attain the desired population in the field. Unnecessary skips or multiples will result in poor or uneven stand establishment, which can further impact yield if stand is reduced significantly. Peanut seed is also larger than corn and cotton seeds and requires higher vacuum, so make sure to adjust the vacuum appropriately to avoid skips and multiples.

4. **Seed Placement and Seed-to-Soil Contact** – Proper setup and functioning of row-cleaners (when planting in conservation systems), double-disc openers, gauge-wheels, and closing wheels for prevalent field conditions is critical to attain adequate seed placement and proper seed-to-soil contact. Make sure that the double-disc openers are creating a true V-shape furrow, gauge-wheels are running tightly (but not rubbing excessively) against the opening-discs, and closing wheels are aligned perfectly behind the planter and set to apply adequate pressure on the furrow. Check for any signs of improper furrow formation when doing field checks behind the planter and make necessary adjustments. It is important to have both good seed placement and seed-to-soil contact for timely and uniform emergence.
5. **Planting Technology** – Issues with planting technology in middle of the planting season can cost significant time and money. Make sure to perform a thorough and timely inspection (at least a week or more) before planting to check status and functioning of all technology components including GPS, seed monitor, wiring harnesses, seed tube sensors, rate control module, electric seed meters, and active downforce system (if available) as well as for any subscription or latest firmware updates for the GPS and the in-cab display.

Peanut Pointers By Scott Monfort

Peanut acreage has remained above 700,000 acres for several years causing growers to plant a portion of their peanuts in April. This is not an issue as long as growers understand the risks of planting early.

Weather is one of the most important factors that can negatively impact stands when planting early. Remind producers to monitor soil temperature closely over the next two to three weeks. The UGA recommendation is for the average four-inch soil temperature to be above 68 for several days (3+ days) and there is no forecast for an approaching cold front. Tomato Spotted Wilt Virus (TSWV) is another important risk factor to take in into consideration when planting in April. Although all varieties have some resistance to TSWV, GA-12Y, TifNV-HIOL, and GA-14N have the highest level of resistance to the virus. This does not mean you cannot plant other varieties in April. However, planting a more susceptible variety in April means a grower will need to lean more on the remaining recommended practices in the ***Peanut RX*** to aid in reducing the risk of TSWV like plant twin row, use recommended seeding rates to ensure 4 + plants per foot of row is achieved, apply Thimet in-furrow, etc. If your risk is high for TSWV based on the Peanut RX, I would avoid planting GA-18RU, GA-09B, TUFRunner 511, and Florun 331 and in April.

Other than soil temperature and TSWV risk, growers need to monitor soil moisture in the top 3-4 inches of the soil profile. Seed should be planted 2-2.5 inches deep and you want at least an inch of moisture above the seed. DO NOT plant seed 3 inches or deeper chasing moisture. All you will do is increase your potential of stand loss and increase the risk of TSWV as a result of erratic emergence. If moisture is a limiting factor, make sure growers know the importance of adding moisture before they plant. They run the risk of shocking the peanut seed if they plant into dry soil and then add moisture afterwards, especially in hot conditions. This will also cause emergence to be erratic which increases your risk of the virus.

Finally, remind your growers "UGA doesn't recommend the use of in-furrow fertilizers for peanut". Our research has shown a 20 - 40 % reduction of stands with the 2-3 gal/A rate of fertilizers applied infurrow with the seed. We have also observed a delay in emergence of 3-5 days with rates between 0.5 and 1 gal/A. Growers need to understand the risks of using these types of products. Please call me if you have any questions or comments.

Seed Quality

Based on information from the Georgia Department of Agriculture's Seed Laboratory in Tifton, this year's peanut seed quality is very good. This is not to say there won't be an occasional situation where seed quality might be less than expected. With this in mind, growers need to also know the germination % of each lot of seed they purchase. This way, they can adjust seeding rates appropriately. UGA recommends planting 6-8 seed per foot in order to achieve at least 4 uniform plants per foot of row. Planting more than 7 seed/ft on singles can increase seed rot. Remind them that when they purchase seed and take possession of the seed they must keep it in a cool, dry, well ventilated location until planting. Growers and Buying points need to make sure to adhere to the 1st in:1st out rule. And always, plant seed under optimal temperature and soil moisture conditions to ensure good stands are achieved.

Checklist to Start the Season By Bob Kemerait

It is nearly time to begin planting our 2022 peanut crop. Growers are reminded that many important opportunities for successful disease and nematode management occur at the beginning of the season. Growers are advised to consult the 2022 Peanut Rx (available online at www.peanutrx.org, in the UGA Peanut Production Update, and in Peanut Rx cards from a number of chemical companies) to better understand the risk they face to leaf spot, white mold, and Tomato spotted wilt disease in each field and steps that can be taken to reduce this risk.

Varieties: Though 'Georgia-06G' remains the most widely-planted variety again in 2022, growers are encouraged to plant other varieties as well. In careful selection of varieties in addition to Georgia-06G, growers can capitalize on the disease and nematode resistance found in newer varieties. For example, 'TifNV-HiOL' is nearly immune to the peanut root-knot nematode and 'Georgia-12Y' has better resistance to white mold than does Georgia-06G. Growers should strongly consider planting moreresistant varieties in addition to the Georgia-06G they will plant.

Bottom line: Planting TifNV-HiOL eliminates the need for use of nematicides to protect the peanut crop from peanut root knot nematodes (but not the lesion nematode which can be problematic at times. Using Peanut Rx as a reference, growers can also choose to plant varieties which have improved resistance to Tomato spotted wilt disease, leaf spot diseases, and white mold.

Tomato spotted wilt and Peanut Rx: Tomato spotted wilt can be a serious threat to every field of peanuts every year. I am concerned for the 2022 crop as our warm(er) winter could impact the biology of the thrips that transmit the Tomato spotted wilt virus to the peanut plants. The combination of factors found in Peanut Rx, to include variety, planting date, plant population, and choice of insecticide to manage thrips, has a significant impact on the risk to this disease. Once the furrow is closed, management options for Tomato spotted wilt disease are basically finished.

Seed rot and seedling diseases are a threat to peanut plants in every field. Peanut seed must be protected from a number of fungal pathogens to protect against seed rot. You seedlings need to protected from fungal pathogens as well, primarily *Aspergillus niger* and *Rhizoctonia solani*. Environment has a HUGE impact on seed rots and seedling diseases. Planting into cooler and wetter soils increases risk to seed rot and seedling disease caused by Rhizoctonia solani. Planting into hot and dry conditions greatly increased risk to Aspergillus crown rot. To reduce risk to these diseases, growers are encouraged to consider environmental conditions at planting and to delay planting if conditions favor disease. Growers can reduce threat to these diseases by avoiding planting in cool soils and by using irrigation, if available, to cool hot and dry soils. Fungicide seed treatments (preferably Rancona or Trebuset) are a first line of defense to minimize impact of seed rots and seedling diseases. Growers can also use in-furrow products, to include azoxystrobin, Velum, and Proline to protect the crop.

Nematicides are an important consideration for growers who have a problem with the peanut root-knot nematode by who do not plant TifNV-HiOL. Fumigation with Telone II (4.5-6 gal/A) 10-14 days prior to planting is our most effective nematode management option. However, growers can also successfully manage nematodes with AgLogic 15G and with Velum. But these critical management options must be deployed before the furrow is closed.

Use of Proline in-furrow is our best option for management of Cylindrocladium black rot (CBR) and
Proline applied in-furrow may have some benefit for management of early season white mold as well.

An in-furrow application of Proline is not as effective as a banded application of Proline 3 to 5 weeks after planting; but it should have some efficacy.

Again, growers are reminded that many important opportunities for successful disease and nematode management occur at the beginning of the season. Don't miss the opportunity.

April, 2022 Peanut Pointers By Mark Abney

It is peanut planting time again, and the hot topics when it comes to insect management at planting don't change much from year to year. Thrips are the most consistent insect pest in Georgia peanut: pretty much every field will have them. Most of thrips management and all of tomato spotted wilt management is over when the seed furrow closes. We spent a lot of time at the county grower meetings this winter talking about thrips management options, and I hope growers are prepared to make good decisions to start 2022.

We all know scouting is the best way to prevent insect management mistakes, and we also know that a lot of peanut acres will not be scouted. There are a number of reasons for the lack of scouting; most of them are simple, and some are very reasonable. Below are some key points that we should try to help growers remember as they work through the 2022 season. If you remember the message from grower meetings this winter: killing insects does not make you any money. The goal is to prevent losses and keep as much of your money in your pocket as possible.

- Applying an insecticide when insect populations are below threshold is a waste of money.
- Pest identification is important, and in peanut it is usually not difficult.
- Choosing the correct insecticide is very important. Efficacy, cost, and risk of flaring secondary pests should be considered every time an insecticide is applied.
- Proper sprayer calibration saves money.
- Nothing works 100% of the time.

There is no revelation here, but a great deal of insect management frustration occurs each year because someone forgot one or more of the five points listed above.

The following is a reminder about calibration that is becoming a regular part of my April Peanut Pointers article (if it stops being a problem, I will stop repeating it).

There are a lot of things a grower must consider at the start of planting season each year. One important chore that can easily be overlooked in the rush to get seed in the ground is calibrating insecticide application equipment. Calibration is not generally a task folks enjoy doing (or writing or reading about for that matter), but it matters…a lot. Most Georgia peanut growers will be putting insecticide in the seed furrow for thrips management. The application technology used to accomplish this task will vary widely from farm to farm, but the one constant is that properly calibrated equipment will save growers money and reduce the risk of thrips injury.

"It worked fine last year", "I don't have time for that", "That's good enough, let's roll", "It should be fine" are some phrases that are all too commonly heard when it comes to calibrating sprayers or hopper box applicators. What might seem like a small rate increase can lead to thousands of dollars in extra insecticide costs and possible crop injury in addition to potentially being off label. Applying less than labeled rates can result in poor pest management and can increase the risk of insecticide resistance.

Growers should be encouraged to calibrate their equipment before they start planting the 2022 peanut crop; the time (and sometimes frustration) will be worth it.

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