Lee County Telephone (229) 759-6025
P. O. Box 589 Fax (229) 759-3302
Leesburg, Georgia 31763

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

uge4177@uga.edu

Lee County Ag Newsletter

August 2022, Volume 22, Number 10

August Weather & Climate Outlook

Pam Knox, Agricultural Climatologist, UGA

The temperature in July has been generally slightly cooler than normal, with daytime temperatures below normal (from clouds) and overnight temperatures warmer than normal due to the abundant humidity we have experienced this month. This is also reflected in the wetter than normal rainfall for most of Georgia in July, as several fronts have dropped into the state from the north, serving as a focus of developing thunderstorms that have produced spotty rain across the region. Some areas have seen a lot while other areas nearby have been mostly missed by the showers. Because of the rain, drought conditions in most of the state have seen significant improvements, and these are likely to continue.

In August, the pattern looks similar to July, especially in the first two weeks. We will continue to see periods of showery weather broken by occasional dry periods. Temperatures are expected to be hotter than normal early in the month but should move back towards more seasonal conditions later in August. Precipitation in the first two weeks is expected to be near normal but is expected to increase again near the end of August, especially if the tropical season starts to ramp up. It will be scattered as we expect in summer thunderstorms, and some areas will see more rainfall than others.

So far this year, the Atlantic tropics have been relatively quiet, with just three named storms and no hurricanes so far. This has been due in large part to large plumes of Saharan dust that affect the vertical temperature structure of the atmosphere and reduce thunderstorm development while cooling the sea surface a little. Once these subside, we should start to see the tropical waves coming off of Africa grow more quickly and turn into tropical storms and hurricanes as the peak part of the tropical season approaches in mid-September. Of course, we don't know where they will go, but the Southeast usually gets the effects of several of them.

Longer-term, NOAA and others are continuing to predict the continuation of a triple-dip La Nina, which is keeping the Eastern Pacific Ocean one of the few areas in the globe cooler than the long-term average. This is expected to last through winter, which could mean another warmer and drier than normal winter for at least parts of Georgia. Last year when this happened, it meant that some parts of the state did not see frost until well into January, allowing some pests and diseases to overwinter well into the year. This makes early treatment of potential problems, including in-furrow treatment, something of special importance in 2023. However, that is a long way off yet, and ENSO predictions in mid-summer are not always

accurate for next winter, so you will need to keep an eye on this when it comes closer to planning for the next growing season.

August: a month to manage diseases both now and in the future Bob Kemerait, Plant Pathologist, UGA

August is a month that is critically important for disease and nematode management for peanuts grown in Georgia. Heat, humidity, sporadic rainfall, days since planting, and growth of the peanut plants all put the crop at high risk for diseases, especially white mold and leaf spot. The heat, humidity, rainfall, and irrigation are near-perfect in August of 2022 for infection and development of fungal diseases. The dense canopy of foliage that has developed in many fields traps moisture and humidity, thus prolonging leaf wetness periods and increasing risk to diseases. The dense canopy of foliage also makes it more difficult for fungicides applied to the leaves to reach the crown of the plant for protection against white mold.

By this time of the season, much of the crop is between 90 and 100 days after planting, which is sufficient time for leaf spot and white mold to become established in most, if not all, fields. Incidence of disease is should be lower in well-rotated fields and/or in fields where appropriate and timely fungicide programs have been deployed. Where crop rotation is short, or where there have been delays in fungicide applications, or where the choice of fungicide could have been better, peanut growers may find that August is the month to fight to find some way to re-gain control of disease in the field.

For disease management in August, I have five recommendations.

1. Growers should continue to scout their fields, or to have their fields scouted for them, to ensure that there are no surprises as far as the development of white mold or leaf spot.

2. Growers should recognize that even where there is good disease control in a field NOW, there is plenty of season left until harvest. NOW is not the time to relax on a disease management program.

3. Growers should recognize that while near-perfect control of peanut leaf spot diseases is possible, though not necessary for top yields, it is nearly impossible to have “perfect” control of white mold. Initial infection for white mold is likely to occur from individual plants being infected by sclerotia in the soil close to the plant. From this initial infection, the disease can spread and burn along a row, resulting in significant yield loss. NO fungicide program will eliminate initial “dinner plate sized” hits of white mold in a field (though good crop rotation will do that). A GOOD fungicide program will stop the initial “hits” of white mold from burning down the row. If your program is not stopping the “burn”, then we need to figure out why. It could be the fungicide is not reaching the intended target. It could be the fungicide is applied too late or at the wrong rate. Or, it could be that a better fungicide could be used.

4. There is significant interest in mixing SPECIFIC formulation of sulfur, remember that NOT ALL sulfur products are effective for management of leaf spot in peanut. It is my experience that sulfur in the right formulation mixed with the right product is similar to adding a pint of chlorothalonil. Adding sulfur to a fungicide for leaf spot control is not magic, but it can be a cost-effective way to improve leaf spot control.

5. Better products and systemic products. I don’t look for any white mold products to be systemic, but some fungicides are better at fighting white mold than are others. Some leaf spot fungicides DO have limited systemic/curative activity against leaf spot diseases and these products can and should be used judiciously in the peanut fields.

Disease problems typically become most obvious during the month of August in Georgia's peanut fields; however there are some problems that cannot be fixed now. Examples of these include damage from the Tomato spotted wilt virus and from nematodes. Opportunity to manage Tomato spotted wilt and peanut root knot nematodes largely ended when the furrow was closed at planting. Damage from these maladies is often quite evident in August as stress increases on the crop. Evidence of damage is a poignant reminder that grower should consider adjusting management strategies for the 2023 crop.

1. Tomato spotted wilt from Midville

2. White mold from Raymond Joyce, Lauren's County

3. Severe late leaf spot, Kampong Cham, Cambodia

August Peanut Pointers

Scott Monfort, Extension Peanut Agronomist, UGA

The crop condition has improved dramatically over the last month as a result of the continual rain and warm conditions. The one thing on everyone's mind is Tomato Spotted Wilt Virus (TSWV). I really appreciate everyone taking the time to rate 10 fields in your county. Please have them submitted by the end of the month. Another thing grower's need to keep in mind is some of these TSWV plants might start crashing as we approach maturity. I have already starting seen this in some non-irrigated fields.
Remind the growers that they cannot spray any magical product to minimize the TSWV. All they can do is try to irrigate when needed and manage pests.

With it being August 10th, we also need to start talking about maturity and maturity clinics. A majority of peanut counties have received rain over the last few weeks allowing the crop to keep moving forward. I am not sure what affect the 95-degree temperatures and dry weather had on the early blooming and pegging. It might have caused some fields to be a little behind but who knows. Please keep this in mind when you start conducting maturity clinics and let me know if the peanuts are behind or not. I would ask you to keep a record of the age of the crop and their maturity as you are conducting your maturity clinics. Please let me know if you need me to visit your county or need me to conduct any preharvest meetings.

Common questions/comments that need to be considered during a Peanut Maturity Clinic

1. What is the Peanut Variety?
2. What is the Age of the Peanut?
3. Are the peanuts Irrigated or Non-Irrigated?
4. What are the conditions of the Plants/Vines?
    - Encourage growers to bring plants not just pods
5. Are there any disease issues?
6. What is the short and long range weather forecast?
7. Remind growers that 200 pods are needed. This would be off several plants pulled from a representative spot(s) of the field.
8. The more information you have, the better prediction of maturity you can make.

RUNNER-TYPE VARIETIES AVERAGE MATURITY

AUNP 17: is a medium maturing peanut (140 to 145 days). Good peg strength, good level of TSWV, white mold and leaf spot resistance

FloRunTM '331': This is a medium- maturing peanut (140 to 150 days). Good level of TSWV resistance

Georgia-06G: Georgia-06G is a medium maturing peanut (140 to 145 days). Moderate Level of TSWV and leafspot resistance

Georgia-09B: Georgia 09-B is a medium maturing peanut (135 to 140 days). Some peg strength issues. Susceptible to leafspot.

Georgia-12Y: This is a medium-to-late maturing peanut (150 days +) --- Good peg strength, high level of TSWV, white mold and leaf spot resistance. Very susceptible to Rhizoctonia Limb Rot.

Georgia-16HO: is a medium maturing peanut (140-145 days). We have observed slightly higher incidence of leaf spot late in the season. We have also observed some peg strength issues in wet conditions.

Georgia-18RU: is a medium maturing peanut (140-145 days). We have observed slightly higher incidence of leaf spot late in the season. This variety is more susceptible to TSWV and have seen some issues with vines crashing because of TSWV and Diplodia.

Georgia-20VHO: is a medium maturing peanut (140-145 days). This is a new variety for most growers**.** It is low growing variety. It has good level of TSWV resistance. The one negative for this variety is that we have observed significant pod loss in wetter years.

August Peanut Pointers

Mark Abney, Peanut Entomologist, UGA

The peanut insect management talk in August will most likely revolve around foliage feeding caterpillars. There are soybean loopers, velvetbean caterpillars, redneck peanut worms, a variety of armyworms, corn earworm and tobacco budworm, and a few odd ball species out in the peanut patch this week. Just the talk of caterpillars is enough for some growers to add an insecticide to their next fungicide spray.
Scouting and treating at threshold remains the best strategy for managing caterpillars. That does not mean that we don't understand why some growers are quick to make a "preventive" application or to spray when pest populations are below threshold.

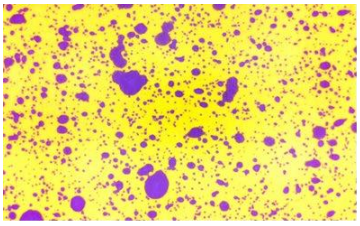
Dimilin remains a very good choice for velvetbean caterpillar, but it is not effective against loopers even with good coverage. Loopers tend to feed low in the canopy (especially at first). It is difficult to get insecticides down in the canopy, and many control problems with loopers and "premium products" can be linked to application and coverage issues.

THIS IS IMPORTANT: An NGO group is currently petitioning the US EPA to revoke all food use tolerances for the organophosphate class of chemistry. In peanut this means phorate (Thimet) and acephate (Orthene). This is not a good situation. The comment period is currently open, and you can visit this EPA site to review other comments (including mine) and add one of your own: Regulations.gov . If peanuts are grown in your county you should submit a comment (this is Abney's opinion). Losing Thimet would be a major blow to our efforts to reduce the impact of tomato spotted wilt disease.

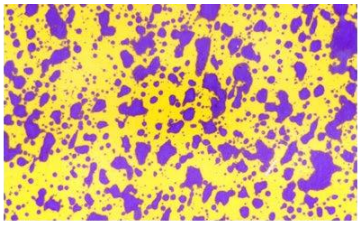
Spray Volume and Droplet Size Considerations Simer Virk and Bob Kemerait, UGA

Timely and effective fungicide applications throughout the season are an important tool for growers to manage and protect yield from diseases like white mold and leaf spot in peanut. While selection of a good fungicide program is critical, it is also important to ensure that the application efficacy is maximized through proper selection of spray parameters including spray volume and droplet size. The type of nozzle selection to attain proper droplet size has also been one of the common questions from the Extension agents and growers in the past as well as this year. Below are few considerations for spray volume and droplet size selection to improve spray coverage and canopy penetration in peanut along with some illustrations:

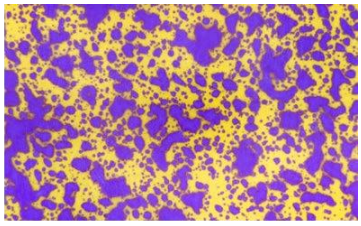
1. **Spray Volume**: One of the most effective ways to improve fungicide application efficacy is by using enough spray (water) volume. The images below show spray coverage for fungicide applications made at three different spray volumes of 10, 15 and 20 GPA. It is obvious from the images that 20 GPA provided the highest coverage followed by 15 and 10 GPA. It was also noticed in these studies that the highest volume (20 GPA) also improved the coverage at the middle of the canopy due to more volume penetrating through and into the peanut canopy. As most fungicide labels have a minimum spray volume requirement (for ground applied) of 15 GPA to attain adequate coverage, so it is important to not use the spray volumes below the minimum recommended since it can affect both fungicide coverage and efficacy.



10 GPA

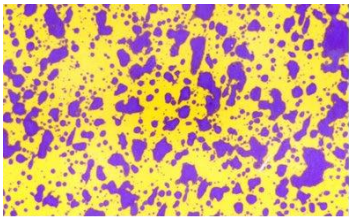


15 GPA

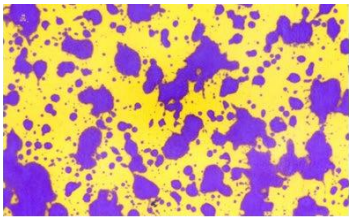


20 GPA

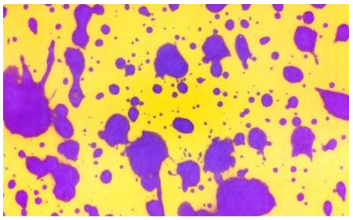
2. **Droplet Size:** Size of the spray droplets is another important consideration for maximizing the effectiveness of fungicide application. The images below show coverage obtained at three different droplet sizes (medium, very coarse and ultra coarse) for the spray volume of 15 GPA. Again, it can be seen that smaller droplets provided better and more uniform coverage while the larger droplets, especially ultra coarse, had less and non-uniform spray distribution. It was also noticed that the larger droplets were unable to penetrate the peanut canopy resulting in considerably reduced coverage at the middle of the canopy. Selecting nozzles that can produce medium to coarse droplets at the nominal operating pressure(s) is recommended to attain adequate coverage and maximize application efficacy.



Medium



Very Coarse



Ultra Coarse

August 2022 Peanut Pointers- Irrigation Update David Hall, Jason Mallard, and Wesley Porter

June was very hot and dry and provided some challenges, while it turned wet in certain areas of the state. While, some areas have gotten rainfall, others have remained dry. The last week of July turned hot and dry again. If peanuts were planted during the late-April or Early-May time frame they are at or just moving out of peak water usage and some of the rains has helped to keep the water requirements satisfied. However, don't forget that over-irrigating peanuts can cause yield reductions so be careful when deciding when to apply irrigation especially if it has been as wet as it has been in some areas lately. A good soil water balance model or soil moisture sensors can really aid in building confidence on when to apply those few small events to prevent yield loss, and when not to apply those events for the same reason.

For weekly peanut water requirements, please refer to the graph below (the UGA Checkbook). Keep in mind that these requirements are for peanuts that were planted between mid-April and mid-May and that they are for both irrigation and rainfall. This graph should give you a good idea on where we stand for the month of August. Most growers that planted in this time frame will reach peak water use during the month of August and then the daily water use will slowly start to decline. **DO NOT** get behind on irrigation as the weather can just as easily become hot and dry over the month of August. If you fall behind with hot and dry weather it is difficult to catch up with irrigation only during peak demand. For those of you using a soil moisture sensor or Irrigator Pro as your irrigation scheduling method, they will definitely let you know if you get behind on irrigating and it will be a difficult challenge to get that soil moisture back up with irrigation alone, especially with the deeper depths.

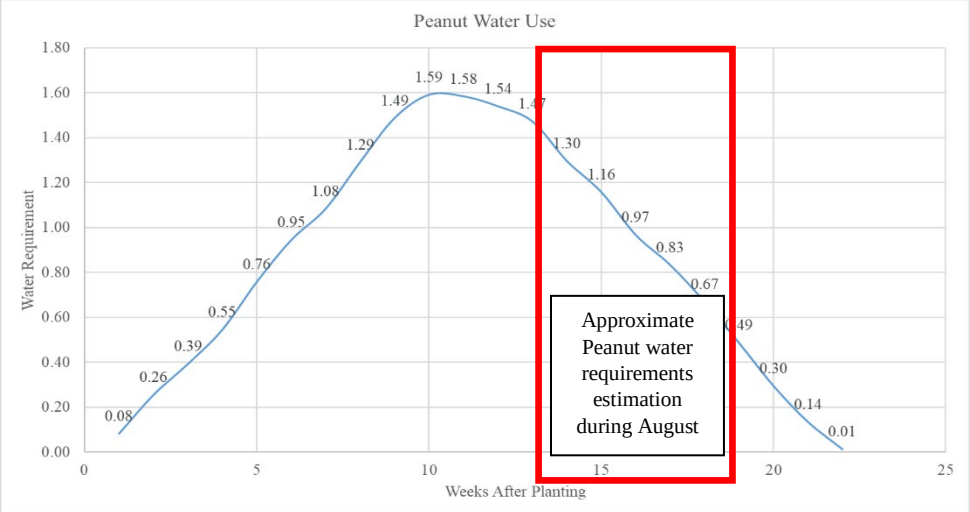


Figure 4. August weekly water requirements for peanuts

One point to keep in mind about using Irrigator Pro, especially if you're a new user and this is your first year running it, if you planted in the mid-April – mid-May window, you will hit the "R3 – Drying Out" growth stage during the month of August, if you haven't already. According to the crop model, this

growth stage will occur at roughly 95 DAP. You will notice that the app will tell you to stop irrigating for about a week. This is to intentionally withhold water once a maximum fruit load occurs on the plant and to stress the peanut plants so that it will stop flowering and allocate resources to maturing the peanuts that are already on the plant. So, if you see this occur and feel like your field is getting dry, don't panic its part of the model and how the soil moisture needs to be handled to ensure the plant reacts appropriately physiologically.

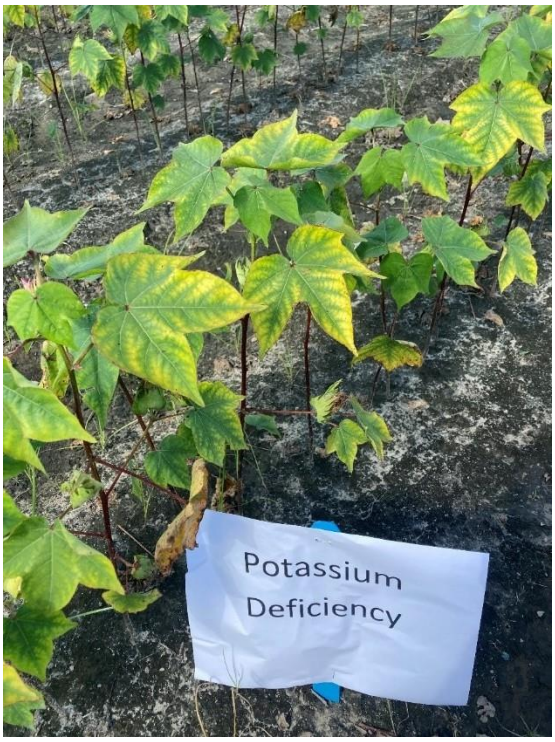
Additionally, with the high amounts of rainfall over the past month it has been very difficult to get sprayers into the fields, thus, many growers may be considering chemigation. Chemigation through pivots may not be for everyone but with possible disease and insect pressure and many acres to cover, this practice may prove timesaving and effective. Especially with above and below ground white mold appearing in many areas this year. The hot, humid, and wet environments are the perfect recipe for disease issues. Remember, read the label to ensure the pesticide is approved for chemigation. Also, run the pivot at 100 percent to apply the least amount of water while chemigating. If your system can not apply 0.1" or less per revolution, chemigation is not recommended. Remember the goal of chemigation is to apply chemical to the foliage of the plant, not the soil. This also means that a chemigation event cannot accurately and validly be counted as an irrigation application. It is also very important to know that your pivot is apply uniformly before considering injecting anything through it for application. So, if you have not had a recent uniformity test performed on the system we strongly discourage the usage of chemigation or fertigation.

If you have further questions about irrigation requirements, chemigation or fertigation reach out to your local UGA County Extension Agent.

Post-bloom Nutrient Deficiencies, Waterlogging, and Foliar Feeding (*Glen Harris*): Most Georgia cotton has been blooming for a while now and is starting to show some classic post-bloom nutrient deficiencies. Some areas of the state have gotten significant rainfall also and are showing symptoms of waterlogging or "wet feet". Sometimes these symptoms, usually involving yellowing or bronzing of leaves, can be confusing and hard to diagnose. Knowing which problem you are dealing with is critical to knowing how or even if you can remedy the problem. Taking soil and tissue samples from "good" and "bad" areas of a field can go a long way toward deciding which nutrient problem you have if any. Petiole sampling is a good way to determine N and K status and needs post-bloom but will not pick up problems such as sulfur and magnesium deficiency (have to take tissue or "leaf blade" samples), Also, once cotton has been blooming for a full 3 weeks, it is not recommended to soil-apply nitrogen (and definitely not K) with ground rigs or through center pivots since root systems are declining and uptake from the soil will be very inefficient. It is at this point (after 3 weeks of bloom) that foliar feeding things like N and K should

be considered.

Here is a quick look at symptoms of some of the post-bloom problems occurring in Georgia cotton right now:



Nitrogen - A pale yellowish leaf color should start on older leaves toward the bottom of the plant since nitrogen is mobile and can move to the younger leaves at the top of the plant. Early on plants can also be stunted and younger leaves may be reduced in size. Post-bloom and if nitrogen deficiency gets severe enough the bottom leaves will turn bright yellow or red. This is a sure sign of nitrogen deficiency.

Potassium – The early signs of potassium deficiency are interveinal chlorosis or yellowing between the veins, more in a "window paning" pattern than the whole area between the vein (like in peanuts). This symptom can progress to the point where it is often confused with nematode damage. Severe potassium deficiency in cotton are very distinct with sever yellowing and also chlorosis or browning around the margins of the leaves. Leafspots, particularly Stemphylium are also often present on sever potassium deficient cotton leaves.

Waterlogging – while not a nutrient deficiency, this symptom is often confused with potassium deficiency. Waterlogging usually results in a bronzing and drooping of the upper leaves giving the cotton "rust" color. While potassium deficiency can show bronzing sometimes, if the yellowing of the leaves between the veins is not also present then waterlogging is likely your only issue.

Sulfur – Sulfur deficiency is becoming more prevalent. It also causes a yellowing of the leaves, more on the whole leaf not just between the veins (like K) and will be on the whole plant including in the top or older leaves (unlike N). Sometimes the leaves on the lower part of the plant will remain green while leaves on the upper part of the plant are yellow.

Foliar Feeding – Once cotton starts blooming foliar feeding of things like N and K should be the focus. Unfortunately, once you get well into the bloom period it is too late to easily fix deficiencies such as sulfur and magnesium, that should be caught pre-bloom with tissue sampling. Petiole sampling can be very useful to help determine N and K needs and maybe boron too, to help move some nitrogen from leaves into bolls, once the cotton starts blooming. General foliar feeding guidelines can be found in the fertilization section of the UGA Cotton Production Guide. There are a lot of foliar feeding products available so it is important to look at how much N and K you are getting at the recommended rate…and how much it costs!

The Next Big Thing (*Bob Kemerait*): Rainfall and high humidity during the month of July across much of the cotton growing region in Georgia have increased the threat to growers from losses associated with target spot (*Corynespora cassiicola*) and areolate mildew (*Ramularia*). Both diseases have been found in cotton growing in our state over the past month and conditions remain quite favorable to spread of both diseases. Judicious and timely use of fungicides (where disease threatens and before disease is established in a field) can protect yields by as much as 150-300 lb/lint per acre, based upon results of field trials conducted by UGA Extension.

The fungicides most effective for management of target spot and areolate mildew include Priaxor and Miravis Top. Headline (pyraclostrobin) has also been quite effective. Azoxystrobin can also be used for management of these diseases but seems more effective against areolate mildew than against target spot. Profitable management of these diseases requires a) careful scouting of fields and b) timely fungicide applications when appropriate. I consider cotton at risk to target spot over the period between the first and sixth week of bloom; the most appropriate timing of a fungicide application seems to be at the third week of bloom. I believe cotton growers should consider protecting their crop against areolate mildew in the disease appears and they are more than a month away from initiating defoliation. Both diseases can cause significant premature defoliation which can hurt yields.

Though I believe cotton growers should be MOST vigilant against target spot and areolate mildew in the coming month of August, attention by many right now is focused on the relatively sudden and widespread observations of bronzed, “drooping”, new-growth foliage. Because of efforts to better understand the Cotton leafroll dwarf virus (CLRDV) since 2017, cotton growers generally recognize that bronzed, wilted leaves are symptoms associated with this newly recognized viral disease. Below I provide my thoughts and recommendations on the current situation.

1. It is true that bronzed and wilted leaves can be symptoms of disease caused by CLRDV, but these are GENERAL symptoms that could be caused by other things as well. For example, in conversations with Dr. Glen Harris and Dr. Camp Hand, it is very possible that the bronzed, new-growth leaves are associated with cotton growing in wet soils after abundant rains. If this is the case, the cotton should recover quickly with drying conditions and sunlight.

2. In my experience as a plant pathologist, it would be highly unusual for viral symptoms to occur quite suddenly across varieties and geographical space. While not impossible, for example if the symptoms are best expressed under some environmental stress, it would still be something I have not witnessed.

3. There is NO DOUBT that some of the bronzed and wilted plants found in Georgia's cotton fields are affected by CLRDV, but to believe that ALL of these plants are infected, or at least symptomatic because of infection, is a stretch.

4. CONSIDERABLE research has been conducted at UGA and elsewhere in the Southeast to better understand CLRDV. While infection seems to be relatively common in fields across Georgia, losses to this disease, at least significant losses are very rare.

5. Growers must remember that there is NOTHING to be done to manage CLRDV during the season and perhaps nothing that NEEDS to be done. My recommendation is to note where symptoms of bronzed and drooping leaves occur and to follow the crop through the season to determine if they become more severe.

6. MOST IMPORTANT: cotton growers should continue to grow their crop to the best of their ability and to focus on the things that they CAN control, for example target spot and areolate mildew. Judicious use of fungicides and timeliness CAN protect yield and increase profitability where these diseases occur.

August Weather and Climate Outlook (*Pam Knox*): The temperature in July has been generally slightly cooler than normal, with daytime temperatures below normal (from clouds) and overnight temperatures warmer than normal due to the abundant humidity we have experienced this month. This is also reflected in the wetter than normal rainfall for most of Georgia in July, as several fronts have dropped into the state from the north, serving as a focus of developing thunderstorms that have produced spotty rain across the region. Some areas have seen a lot while other areas nearby have been mostly missed by the showers. Because of the rain, drought conditions in most of the state have seen significant improvements, and these are likely to continue.

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So far this year, the Atlantic tropics have been relatively quiet, with just three named storms and no hurricanes so far. This has been due in large part to large plumes of Saharan dust that affect the vertical temperature structure of the atmosphere and reduce thunderstorm development while cooling the sea surface a little. Once these subside, we should start to see the tropical waves coming off of Africa grow more quickly and turn into tropical storms and hurricanes as the peak part of the tropical season approaches in mid-September. Of course, we don't know where they will go, but the Southeast usually gets the effects of several of them.

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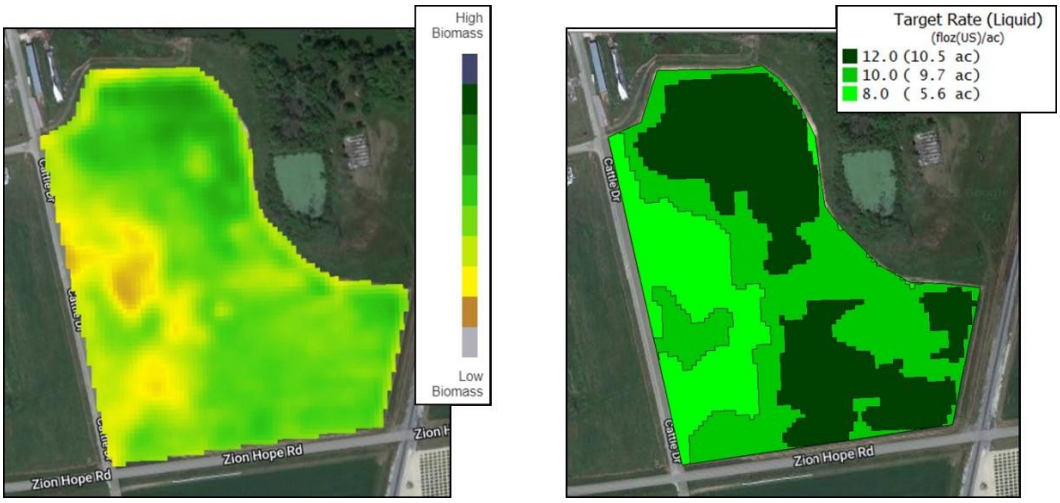
Variable-Rate PGR Application Considerations (*Simer Virk*): In order to better manage plant growth variability across the whole field, there is an increasing interest among consultants and growers in variable-rate (VR) application of PGRs in cotton. In fact, there are several growers across the state who have been utilizing this practice with some success from last few years. Recent conversations with industry partners, consultants, and growers indicated that the VR PGR practice definitely has its benefits over the conventional single-rate applications but the process in itself requires some learning, patience, and consideration to some key points in order to successfully implement variable-rate PGR applications in cotton. For consultants and growers thinking about starting out or already doing some sort of VR PGR applications, few of these main considerations are listed below. Please note that this is not a comprehensive list but some best management practices related to VR PGR applications in cotton.

1. **Ground Truthing Imagery** - Currently, most of the VR PGR applications are based on in-season satellite imagery which is available through common ag data management platforms (such as John Deere Ops Center, Climate FieldView or Granular AgStudio/Insights) throughout the season which provides a crop health/biomass variability within a field – an important data layer for VR application (example map shown in Figure 1a). The frequency and resolution of the imagery can vary depending on the provider and the subscription. Some consultants may also be using in-season drone imagery

but satellite imagery is more common and readily available these days. Regardless of the imagery source and resolution, one of the most important aspects when generating prescription (Rx) maps for PGR applications is ground truthing the imagery for each field to verify the actual plant growth within the field as well as the transition areas so that the Rx map can accurately depict these areas and the appropriate PGR rates can be assigned to each area/zone based on visual observations and not just solely based on the values in the imagery.

2. **Number of Zones/PGR rates:** Another important consideration when creating Rx maps for VR PGR applications is towards the number of zones as it also determines how many different PGR rates will applied across the field (Example map with three zones shown in Figure 2b). Keeping the number of zones between 2 and 4 is generally a good strategy as it helps keep the math (converting from oz/ac to gallons/ac) and the logistics of VR application simple and easier to implement. While most data management software's will let users assign 5 or more rates, that doesn't mean we should always go with the most rates possible in the field. That not only makes the process overwhelming and complex but also impractical most of the time, especially when we consider nozzle selection and spray equipment capabilities in achieving the assigned rates in the field.

3. **Sprayer and Technology Capabilities:** A rate controller is a must-have technology for VR PGR applications as it helps in regulating the flow and target different application volumes i.e. PGR product rates based on the Rx map. Most row-crop sprayers also have some sort of section or nozzle control capabilities on the boom. For accurate VR applications, proper consideration to the number and length of boom sections is equally important as point# 2 above when creating Rx maps to avoid creating multiple small and/or irregular zones that will possibly result in misapplications in the field. Given the nominal sprayer application speeds (anywhere from 10 to 16 mph), it is also important to consider response time of the rate controller for rate transitions and the boom sections to turn on/off when determining the number and size of the zones in the prescription maps. It is always a good practice to merge smaller zones with adjacent larger zones to avoid application errors due to equipment/technology limitations. Just creating a VR map doesn't necessarily guarantee that it will be implemented correctly in the field. Proper consideration to both spray equipment and technology capabilities is highly important.



(a) (b)

Figure 1. Example of an in-season map (satellite imagery) depicting crop biomass variability within a field, and (b) a corresponding variable-rate Rx map (only product rates in oz/ac shown) with different PGR rates assigned to three zones.

Cotton Irrigation Considerations for August (*David Hall, Jason Mallard, Wesley Porter*): In many areas of the state in 2022, it has seemed like a roller coaster ride with soil moisture and environmental conditions. June was very dry and hot while July has had some areas with totally saturated soils, almost to the point of being drowned, and then back to hot and dry the last week of July. The crop that was planted during May should have reached peak water use during late July and start actually reducing water requirements moving through August. It should have reached peak bloom sometime around 2-6 weeks of bloom. Data have consistently shown that keeping soil moisture in the desired range can be very beneficial to cotton yields. A good soil water balance model or soil moisture sensors can really aid in building confidence on when to irrigate to prevent yield loss, and when not to irrigate for the same reason.

As mentioned in last month's newsletter, we have been ramping up water demand to this year's peak demand in cotton. Even though perhaps peak water demand may be past if the crop was planted during late April or early May, it is critical not to fall behind on irrigation during bloom. As mentioned above, we are in peak water usage, thus, it is critical that we continue to monitor the weather and make smart irrigation decisions. Even though water requirements are starting to drop, don't get too comfortable, it's always difficult to catch up with just irrigation. Over the next month, keeping up with the water requirements is very important. The water demand will be lowering as we move on into the season, but it is still critical to have adequate soil moisture during the entire period of bloom. Based on planting date, the weekly water requirement of the crop can range between about 1.0 to 1.5 inches per week based on the UGA Extension checkbook method for cotton. Please keep in mind the weather conditions and how much of an impact they can have on water requirements. In other words, the checkbook method is there to give you a reference as a guide, but should not be used for the final decision. We are entering the tropical storm season and have opportunities for large rain events and even some hit or miss showers as we have already seen through late

June and into July. Some days can be of intense heat with low humidity, leading to high evapotranspiration rates and cause the need for more water than recommended for that week. Conversely, we can receive hot days with very high humidity and overcast conditions which will mean the plant is still using water but the evapotranspiration rate is very low. Plus, with a good canopy closure the ground is well shaded. It's really amazing to see crop water use through moisture sensors. The graphical representations of plant water demand and environmental conditions can be an eye-opening experience to witness throughout a growing season. If you don't have access to moisture sensors, walking your fields with a shovel or soil probe to investigate available moisture is highly recommended. Again, the checkbook method is just one tool of many tools that can be used to assist in scheduling irrigation.

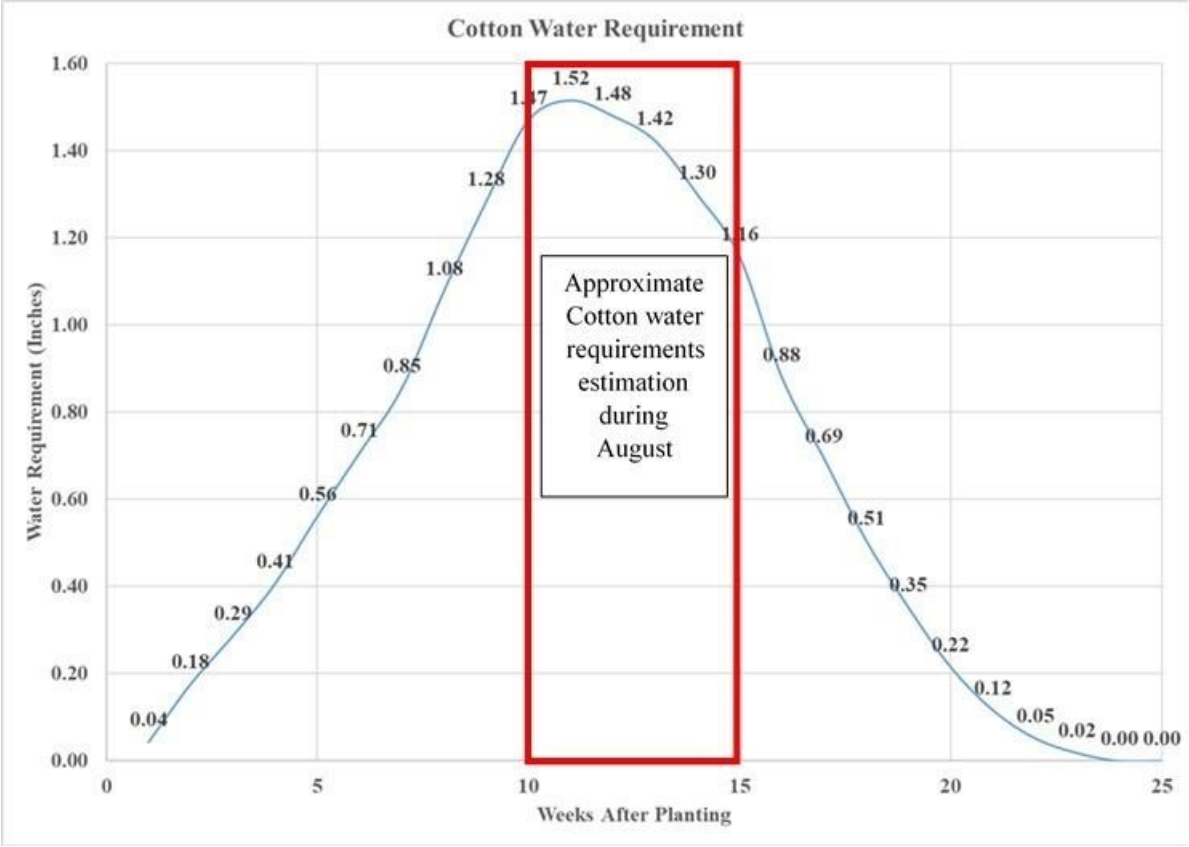


Figure 1. UGA Cotton Checkbook, with the estimated water use period highlighted.

Additionally, with the high amounts of rainfall in some areas during July it may have been very difficult to get sprayers into the fields, thus, many growers may be considering chemigation. Chemigation through pivots may not be for everyone but with possible disease and insect pressure and many acres to cover, this practice may prove timesaving and effective. Remember, read the label to ensure the pesticide is approved for chemigation. Also, run the pivot at 100 percent to apply the least amount of water while chemigating. If your system can not apply 0.1" or less per revolution, chemigation is not recommended. Remember the goal of chemigation is to apply chemical to the foliage of the plant, not the soil. This also means that a

chemigation event cannot accurately and validly be counted as an irrigation application. It is also very important to know that your pivot is applying uniformly before considering injecting anything through it for application. So, if you have not had a recent uniformity test performed on the system we strongly discourage the usage of chemigation or fertigation.

If you are considering fertigation using the pivot, that is perfectly fine. However, keep in mind that the goal in fertigation is to get the fertilizer to the soil and into the top few inches of the soil. Ensure that you are applying the water at a rate to accomplish this, not to leave water and fertilizer on the crop canopy, and not to cause runoff or leaching of the nutrients.

If you have further questions about irrigation requirements, chemigation or fertigation reach out to your local UGA County Extension Agent.

Factors Responsible for Boll Retention/Shed in Cotton (*John Snider, Gurpreet Virk, Ved Parkash, Joshua Lee*): In the last newsletter, I discussed the effects of environmental stress on physiological processes in cotton. I did so because of the high temperature and low rainfall conditions we had experienced up to that point in the season. Consequently, I was convinced we would start to see significant increases in fruit abscission once the crop got into the peak bloom phase of development. We are now in the peak bloom to cutout phase of development for well-managed cotton planted back in May, and to my surprise, the crop seems to have fairly high fruit retention this season, which I'm sure Dr. Hand will mention at some point in this newsletter. Nonetheless, fruit abscission/shed (even at low rates) is observed in every cotton field in the state at one point or another during the season. Various environmental conditions such as extreme heat, drought, excessive rains, cloudy days, and certain management practices conducive to rank growth will promote fruit shed. However, fruit shed may also occur as a consequence of normal intra-plant competition for resources during crop development. The abscission zone is a layer of cells present at the base of the petiole (leaves) or peduncle (fruit stalk) as shown in Figure 1 below. Abscission takes place due to softening and weakening of the cells in this zone because of two main digestive enzymes: pectinase and cellulase. The plant hormone IAA present in high concentrations in a square or boll will inhibit the production of these enzymes. A reduction in IAA levels or a decrease in the ratio of IAA to ABA in the fruit will stimulate ethylene production, which increases the production of these degradative enzymes and promotes the abscission process.

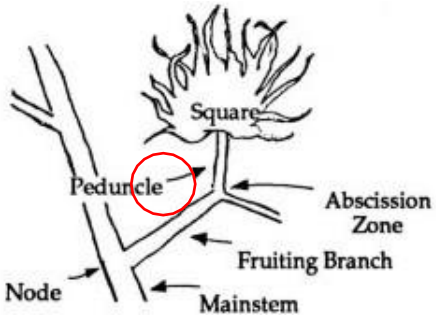


Figure 1: Image showing the Abscission Zone for cotton (Hake et al. 1989).

Insects can cause shedding of squares or smaller bolls of all ages because they cause damage to plant tissues, and this stimulates fruit abscission. However, a certain amount of shedding occurs naturallyin the absence of biotic stresses. Under normal conditions, the cotton plant will shed approximately 60% of all squares it produces during a typical growing season. The age of the square or boll also determines the probability it will shed. Larger squares, and medium size bolls have higher resistance to environmental and within-plant factors stimulating fruit shed, resulting in higher retention. Once a boll has made it to two weeks after flowering, it is highly unlikely that it will shed. This is because the plant has already invested significant resources into the development of the fruit and because the vascular system develops very thick, fibrous connections to the plant, preventing fruit shed. Fruit/square retention is also influenced by fruiting site position along a fruiting branch with higher fruit retention for fruit produced closest to the mainstem. The squares farther away from the mainstem have a substantially lower probability of being retained. Crop developmental stage also influences fruit abscission. For example, we have already established that young bolls are more likely to shed than older bolls; therefore, the highest abscission rates are observed in the days following peak bloom. This type of fruit shed will happen even under non-stressed conditions. The following graphs illustrate the sensitivity of square or boll shed based on age of fruit (2 A) and position on the plant (2 B).

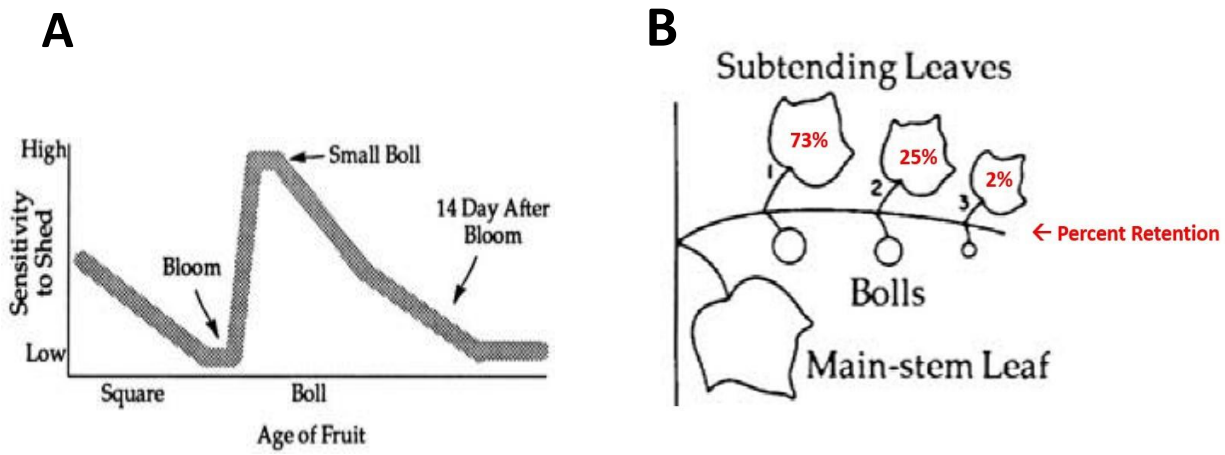


Figure 2: Sensitivity of square or boll shed based on age of fruit (A; Hake et al., 1989) and position on a fruiting branch (B; Oosterhuis, 1990; Guinn, 1982).

Environmental factors causing fruit shed: As mentioned previously, various environmental conditions can influence square or boll shed.

Light intensity: The impact of high cloud cover (causing low light intensities) on fruit retention has been heavily investigated. Specifically, exposure of young fruit to extremely low light intensity for even a few days can cause nearly all the fruit at that position to shed. Sensitivity to low light decreases significantly with increases in fruit age. For bolls greater than 2 weeks in age, short term low light conditions have no impact on fruit retention.

Temperature: High temperatures impact reproductive growth in cotton more than vegetative growth. One of the most common effects of high temperature (day and night) on reproduction in cotton is an increase in

pollen sterility. If this results in poor seed set, the likelihood of fruit set is low. High night temperatures

cause pollen sterility by affecting a sensitive stage of pollen development that occurs during early square development. For example, Hodges et al. (1993) showed that day/night temperatures in excess of 95/81°F (day/night temperature) substantially increased boll abscission and negatively impacting productivity. High temperatures occurring during flowering and soon thereafter have also been shown to limit fertilization, thereby increasing the probability of fruit shed.

Water: Both high and low soil moisture conditions can substantially influence fruit shed or retention. Low moisture conditions such as drought can increase rates of boll abscission by reducing leaf area and photosynthetic efficiency, thereby limiting the number of fruit the crop can support. In contrast, water excess can stimulate rank growth, causing extensive shading of lower branches and high rates of fruit abscission. Additionally, the timing and amount of water received by the crop can affect percent seed set and rate of abscission.

Some observations: The first observation worth repeating is that fruit retention has been high this growing season, so I haven't seen as many young bolls on the ground as I've seen in the past (Figure 3A). Secondly, abscission is an enzymatic process, so it needs to occur in living, hydrated tissues. In some instances, when well-maintained cotton plants are exposed to high air temperatures, drought, or both during flowering, water loss from the young fruit exceeds water supply from the plant, and the fruit will get frozen in place ("mummified"). This occurs because the tissue desiccates rapidly, and this prevents the full degradation of the abscission zone (Figure 3B). I haven't seen this very much during the current growing season, but it does illustrate the need for a properly-formed abscission layer. This will be relevant when we discuss the physiology of defoliation in subsequent newsletters.

Figure 3. Recently-shed young fruit (A) and a “mummified” boll that has been frozen in place (B)

due to extreme heat.

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Musings from the Road (*Camp Hand*): No two years are the same. I was visiting with a grower about some of the weather patterns he has observed on and around his place this year and he said, "It normally doesn't happen like that." I've observed some similar things and I said, "This year is definitely abnormal." County Agent extraordinaire Bill Starr asked, "What is a normal year?" Great point.

In my travels across the great state of Georgia in July, I noticed a few abnormal things. Some of those things will impact us for the rest of the season. So here are my musings from the road.

Throughout the month of July, as I would walk a field, I would evaluate fruit retention. To see 100% retention at first bloom isn't all that abnormal for us, but as the season progressed I kept expecting to see fruit on the ground… But I didn't. By peak bloom I would still be hunting for fruit on the ground and they would be sparse. Whereas normally you can see a plethora of fruit on the ground by peak bloom. In the Southwest part of the state fruit began to shed more by the 4th to 5th week of bloom, but the trend repeated itself in Southeast Georgia. I was in Statesboro last Monday and walked a field in peak bloom. Hardly any fruit on the ground. I asked the grower if their whole place looked that good. "Pretty much," he said. In this newsletter, Dr. John Snider wrote about fruit shed on a cotton plant and what causes it. Generally, cloudy days, high humidity, and high nighttime temperatures are major contributors to fruit shed, and there were plenty of all these factors in July… so what gives?? I'm not 100% sure to be quite honest. I'll have to go back and look at the weather data from around the state more closely. But there are a few things that this level of fruit retention will impact:

1. PGR applications are "holding" plants more effectively than normal. This makes perfect sense. One of the most overused sayings in the cotton "bidness" is that "The best growth regulator is a heavy boll load." Although overused, the saying is true. A heavy boll load causes the plant to

put more energy into filling those bolls than growing vegetatively. So, with higher levels of fruit retention noted across the state, fewer PGR applications have been necessary to manage vegetative growth.

2. Crop maturity. This crop will be early, no doubt in my mind. As I see growers and agents in my travels, I tell them, "This crop will be ready before you are ready to get it." Now, most of my colleagues in other parts of the country preach earliness in a cotton crop… and while I would love nothing more than to get our crop off in September/October and be done before Thanksgiving, I understand the reality of the situation. Peanuts need to be dug and combined about the same time and it takes more labor to do that. BUT, if you can spare folks to get this cotton crop off in a timely manner so that it doesn't hang until December (or later), I think it would be wise to do so. The vast majority of the crop looks really good, and I would love nothing more than to get it all to the gin when yield and quality are at their peak. This level of earliness scares me a little bit, but I have no doubt Georgia growers can get it done.

Last week I was having a lot of conversations with people about how good the crop looks, and it seems like some has made a southward turn. It's been roughly a week since much of the state has gotten a good rain, and it's starting to show. As you walk your fields, you will probably start to see that the plant is aborting small bolls (less than 14 days old) and holding new squares in the top. Although the cotton plant isn't "thinking", this is its way of conserving energy to support fruit that it has already invested a lot of resources in (bolls that are greater than 14 days old) and hoping that it will be able to support new fruit later down the road. Now, you're going to see those new squares in the top and want to wait for it to mature (I've already had the same thought). Just remember, if that square flowers after the 3rd week of September, it's unlikely that it will result in a harvestable boll unless we have a warm fall.

I think I speak for the entire UGA Cotton Team when I say we are hoping and praying for a favorable August to finish out this crop and perfect harvest conditions. In my conversations with other members of the team, the consensus is there is a good crop out there. Time to finish it out. If anyone has questions or needs anything, your local UGA County Extension Agents and Specialists are here to help! Don't hesitate to reach out.

Silverleaf Whitefly Management (*Phillip Roberts*): Silverleaf whitefly (SLWF) populations have increased significantly in areas we most commonly observe whiteflies. Insecticide applications targeting SLWF began in some fields about 10 days ago and the frequency of fields exceeding threshold has been increasing. Only time will tell how populations will expand from these core areas. Hot and dry conditions favor whitefly population buildup. It is extremely important that we scout all fields for SLWF and do everything we can not to exacerbate populations. Most importantly we need to conserve beneficial insects, do not treat other pests unless thresholds are exceeded and avoid using insecticides which are prone to flare SLWF populations. The presence of SLWF in a field should influence every decision we make. It is also extremely important SLWF insecticides are applied in a very timely manner if SLWF infestations exceed threshold. Being late with the initial insecticide application will make management more difficult and

expensive in the long run. I would encourage everyone to read the two publications below. The first provides detailed instructions on how to scout whiteflies and use thresholds. The second explains the biology of SLWF and describes environments which are at greatest risk of whitefly infestation.

1. Sampling and Managing Whiteflies in Georgia Cotton: https://extension.uga.edu/publications/detail.html?number=C1184

2. Cross-Commodity Management of Silverleaf Whitefly in Georgia: https://extension.uga.edu/publications/detail.html?number=C1141

Insecticides recommended for SLWF include Knack, Courier, Assail, Sivanto, PQZ, Venom, and Oberon.

Knack and Courier are insect growth regulators (IGR) and have good residual activity and minimal impact on beneficial insects. In general, these IGRs are slow acting but perform well when applied in a timely manner. Conservation and the presence of beneficial insects are an important part of the IGR program. Knack is active on large nymphs and eggs (eggs will not hatch) Courier is active on nymphs only. Neither Knack nor Courier will control adults. Knack has a 24(c) Special Local Need label for a split application of whitefly on vegetative cotton. Knack should be applied at 5 ozs followed by an additional application of 5 ozs 14 days later. This split application allows for treatment of new plant growth which occurs after the first application. If cotton is no longer vegetative or "cut out", the rate of knack is 8-10 ozs per acre. Courier is labeled at 9-12.5 ozs per acre. We would expect 2+ weeks of residual activity of the IGRs. If you are late with the initial application an IGR is not the most appropriate insecticide.

Assail and Sivanto are active on all stages, immatures and adults. Sivanto provides more consistent control of adults when compared with Assail. Assail or Sivanto would be a preferred choice over an IGR if you are late with the initial whitefly application. We would expect 2+ weeks of residual activity with Assail and Sivanto. PQZ is a relatively new product which provides good control of adults and is also active on immatures. Residual activity of PQZ is less than that observed with Assail and Sivanto. Venom and Oberon are also labeled for whiteflies but are rarely used.

It is extremely important that we as an industry manage SLWF on all fields. In addition to reducing yield, honeydew accumulation on lint can negatively impact fiber quality and spinning efficiency at mills. Yield loss can be devastating if high populations are not controlled.

Georgia Grain News 8-5-22 Rome Ethridge

Dr Phillip Roberts, UGA Entomologist, has provided us with a good Redbanded stinkbug info sheet. We have reached threshold in many fields for this destructive insect that can affect us longer in the season and is hard to kill. A mix of Bifenthrin 6.4 oz with a half pound of Orthene has worked well, other suggested chemical mixes are listed below. I've found a sweepnet to be very useful in scouting soybeans.

Redbanded Stink Bugs (RBSB) are more damaging to soybean compared with stink bugs we normally encounter in Georgia soybeans. Redbanded stink bug is a major pest of soybean in the Mid-South especially following mild winters. Redbanded stink bugs feed on legumes and are NOT a pest of cotton. Unfortunately, we are observing redbanded stink bugs in south Georgia soybeans. The threshold for RBSB is lower than that we use for commonly encountered stink bugs in Georgia. Insecticides needed for good control are also different for RBSB. Redbanded stink bugs are about half the size of southern green stink bugs. Adult RBSB are light green with a reddish band near the thorax. Older RBSB nymphs are green and somewhat flattened with black and red markings on the top of the abdomen. The primary characteristic to identify RBSB adults is a long spine that arises from the abdomen and protrudes between its hind legs.

Redbanded stink bug adult and nymphs (left) and photo illustrating the abdominal spine extending between the ack legs of a RBSB adult (right).

Proper identification of stink bugs will be important. Southern green, green, and brown stink bugs are the most common stink bugs observed infesting soybeans in Georgia (photos by Herb Pilcher, ipmimages.org).


Southern green stink bug adults


Southern green stink bug nymph


Green stink bug nymph


Brown stink bug adults


Brown stink bug nymph

Thresholds: Since RBSB is more damaging than other stink bugs infesting soybean, the threshold is lower.

> Southern green, green, and brown stink bugs: 9 stink bugs per 25 sweeps or 1 per row foot. Redbanded stink bug: 4 RBSB per 25 sweeps or 2 per six row feet using a drop cloth.

It is likely that fields which have RBSB will also have southern green stink bugs and potentially green and brown stink bugs. These mixed populations can be accounted for by counting RBSB twice and adding to other stink bugs present and using the 9 per 25 sweeps threshold.

The information below is from the 2022 Insect Control Guide from Mississippi State University Extension, found online at http://extension.msstate.edu/publications/publications/insect-control-guide- for-agronomic-crops#soybeans. Note that RBSB can damage soybeans much later than other stink bugs.

Redbanded Stink Bug

Insecticide	*Amount of Formulation per Acre*	*Pounds Active Ingredient per Acre*	*Acres 1 Gallon or 1 Pound Dry Will Treat*	*PHI (days)*	*Comments*
acephate (OP) Orthene 90S	0.56–1.1 lb	0.56–1.1	0.5–1.0	14	Do not harvest for hay or forage. Apply by air at 5–10 GPA and by ground at 10–50 GPA. Maximum AI per acre per season: 1.5 lb.
bifenthrin (P) Brigade 2EC Discipline 2EC Fanfare 2EC	2.1–6.4 oz 2.1–6.4 oz 2.1–6.4 oz	0.033–0.10 0.033–0.10 0.033–0.10	61–20 61–20 61–20	18 18 18	Do not apply more than one time per 30-day interval.
thiamethoxam (CN), λ-cyhalothrin (P) Endigo ZC 2.06CS	3.5–4.5 oz	–	37–28	30	
Tank Mix Options with Bifenthrin					
acephate (OP) Orthene 90S	0.56–1.1 lb	0.56–1.1	0.5–1.0	14	Do not harvest for hay or forage. Apply by air at 5–10 GPA and by ground at 10–50 GPA. Maximum AI per acre per season: 1.5 lb. Tank mix with 5.12 fl oz of bifenthrin (Brigade 2EC or generic) per acre. Tank mixes have proven to give superior control.
clothianidin (CN) Belay 2.13SC	3–6 oz	0.05–0.10	42.7	21	
imidacloprid (CN) Imidacloprid 4F Imidacloprid 2F	1.5 oz 3 oz	0.047 0.047	85.3 42.7	21 21	

THRESHOLD: Treat when numbers reach four bugs per 25 sweeps or two bugs per 6 feet of row with a drop cloth. Between R6.5 and R7: Treat when populations reach or exceed 10 bugs per 25 sweeps. Treatment for redbanded stink bugs can be terminated at R7 unless adverse environmental conditions exist that would promote poor seed quality. Redbanded stink bugs are capable of causing much more damage than green, brown, or southern green stink bugs. Damage from this pest can prevent plants and seed from properly maturing and can render seed unmarketable. Redbanded stink bugs can also damage soybeans much later than other stink bugs.

Aflatoxin In Corn

I'm hearing of some aflatoxin being found in corn delivered this week. Not good. We need to encourage growers to get corn out of the field quickly and dried properly and to the end user or proper storage.

UGA has good info concerning this, https://extension.uga.edu/publications/detail.html?number=B1231 , **Reducing Aflatoxin in Corn during Harvest and Storage**. Here's an excerpt:

Harvest Tips to Reduce Aflatoxin

Research shows most *Aspergillus* infection occurs on corn in broken and damaged kernels and in foreign material. Damage to the grain seed coat permits easy entrance of molds and fungi, and promotes rapid development of storage rots at high moisture and temperature levels. Heat and drought stress can cause seed coat fractures and increase the opportunity for infection to occur. Aflatoxin can develop within 24 hours in mold- and fungi-infected corn stored under these conditions, even though corn was previously free of aflatoxin.

Harvesting must be done in such a way to prevent damage to the seed coat and to assure maximum cleaning of grain, since damaged seed and foreign material contribute to the development of aflatoxin. The following practices will reduce the likelihood of this problem.

When corn reaches maturity, harvest immediately and dry mechanically. Harvest should begin when the moisture level reaches 28 to 30 percent. Studies have shown that most corn hybrids will normally lose about 0.5 to 0.6 percent moisture per day during the dry-down period. You can reduce field exposure by at least 1 to 2½ weeks by harvesting above 22 percent moisture compared to letting corn dry in the field to 15 percent or less. This will require immediate drying, however.

Irrigated corn generally has fewer problems with *Aspergillus* infection due to better growing conditions (less drought and heat stress, etc.). If corn is irrigated, harvest the crop outside the pivot separately and store it separately to reduce chances of contaminating good corn. Be sure the clean the combine before harvesting the irrigated corn.

Set combines to minimize grain damage. Set fans higher to clean out light-weight cracked grain and undeveloped kernels. Slowing header seed reduces kernel damage. Ears in contact with the ground for some time usually exhibit higher than normal aflatoxin levels and should not be picked up, if possible.

Combine cylinder/rotor speed should be slow enough and concave clearance as great as possible to provide adequate threshing. Less damage to seed coat occurs with these settings. Install filler plates between cylinder bars to reduce physical damage.

Grain Handling

Do not hold high moisture grain in wagons or trucks longer than 6 hours. Place high moisture corn being held for drying in a holding bin using forced air to keep it as cool as possible.

Use sound sanitation practices in handling grain. Clean augur wells and pits, and clean around dump stations before and after each use. Minimize physical damage by conveyors or from dropping the grain into tall bins.

Dry Properly

Drying temperature and drying time may have an effect on the development of aflatoxin in stored grain. Slow drying with low heat over long periods could promote aflatoxin development.

Georgia Grain News 8-12-22 Rome Ethredge

The following is some timely Grain sorghum information concerning Grain mold and Ergot from Dr. Alfredo Martinez-Espinoza , UGA Plant Pathology.

Grain Mold is caused by several fungal organisms including *Fusarium* sp (*F. thapsinum*, *F. semitectum* among others), *Curvularia lunata*, *Alternaria* sp, *Bipolaris*/*Drechslera* spp and *Phoma* sp. The disease is more likely to occur when

high moisture conditions are present near harvest time and when normal harvest is delayed. Generally, sorghums with dense, compact heads are more prone to attack than are varieties with loose, open heads. The appearance of the symptoms depends upon the predominant fungus and severity of the infection. In some cases, severely infected panicles show grains fully covered with mold or it can also appear as normal looking grains with a slight discoloration (Fig. 7). The molded grain show pink, orange, gray, white or black discolorations. Heavily infected grain can disintegrate to the slightest pressure while early infected grains often aborted or has reduced kernel size and weight.

Fig. 7. Symptoms of grain mold mix-infection. Right photo shows grain mold initiated by bird feeding (Photos A. Martinez)

Control: Growing cultivars that maturation does not coincide with seasonal rains or that ripens during dry weather after rains have stopped has been successfully implemented as a management strategy. Grain mold can be minimized by growing high-tannin colored-grain cultivars. However, the most common and economical control for the disease is the use of resistant cultivars. Weed control is important as weeds compete for water and nutrients. Insect control is important since insects contribute to plant stress and wound formation. Maintaining balanced fertility to

ensure sturdy plants as well as avoidance of excessive plant population reduces stressful competition for moisture and nutrients. A 2-year rotation with plant species other than sorghum will help to minimize the amount of inoculum in the field. Clean cultivation, elimination of probable weed hosts (e.g. Johnsongrass) and enhancement of the conditions that hasten decomposition of host residue also help to control the disease. Chemical control is difficult to implement and it usually not economical, there are fungicides labeled for grain mold control. For a complete and updated list of products of available fungicide products, refer to the latest edition of the Georgia Pest Management Handbook

Ergot

Recently more samples have been submitted to the UGA Plant Disease Clinic that have been diagnosed as Ergot caused by the fungus Claviceps africana. The disease can cause significant grain losses due to low yields and marginal quality. One striking and unique symptom of ergot is the production of honeydew exuding from the infected florets (Fig 8) which can vary in color and consistency from white/tan to yellow or brown in color and thin to viscous. The honeydew contains infectious conidia that can easily spread by mechanical contact, wind, rain, or insects. Parasitic bodies (of the fungus may develop instead of seed or produce sclerotia. Florets are vulnerable to fungal infection from floret gaping and stigma exertion to pollination or fertilization of the ovary, especially under wet cloudy weather. Fungal infection decreases with increasing temperature and is negligible at temperatures higher than 30°C.

Fig. 8. Symptoms of ergot. Notice the honey dew on the panicle (Photos A. Martinez and R. Ethredge)

Control: The flower-infecting nature of the disease makes it extremely difficult if not impossible to implement scouting activities. Therefore, the disease con be managed by integrating several cultural and chemical strategies. Adjustments in sowing dates and locations can help to avoid ergot infections. The use of clean treated seed can help reduce the amount of sclerotia present on infested seed and reduce the amount of inoculum on seeds. Clean cultivation, elimination of weed hosts (e.g., Johnsongrass) and host residue as well as the prevention of sorghum ratoon or volunteer plants can help to control the disease. In sorghum destined for forage, harvest prior to heading is recommended. Chemical control is difficult to implement however, there are fungicides labeled for ergot control. For a complete and updated list of products of available fungicide products, refer to the latest edition of the Georgia Pest Management Handbook.

Late Season Considerations (Lenny Wells)

As we enter August (This was published August 2) shell hardening is upon us for Pawnee and other varieties are only a few days to weeks behind. This means that for Pawnee we are shifting from nut sizing to kernel filling. As a result there are two things to keep in mind: 1) You should be about done with fungicide sprays on Pawnee; 2) Move up to 100% on irrigation of Pawnee.

For our more traditional cultivars with October maturity dates you need to keep irrigation at about 50% until mid August. This will be enough for sizing if your system has the appropriate capacity. In mid-August you should turn irrigation up to 100%, which is the recommended equivalent of 3600-4000 gallons per acre per day in order to fill the pecans.

You probably need at least one more scab spray on moderately susceptible cultivars like Stuart, Schley, Cape Fear, Kiowa, etc. but you can end scab sprays around mid August on those varieties if they are relatively clean. You will likely need at least 2 more sprays on Desirable but by the latter part of August you can end those as well if they are relatively clean. The exact timing will depend on when exactly Desirable is done sizing. Desirable has a habit of waiting until the last minute to size the nuts and within a preiod of just a few days it will all of a sudden increase dramatically in size. They will be vulnerable to scab until that sizing is complete and the shells harden.

Additionally, if you are considering mechanical fruit thinning, now is the time to do so on most cultivars. It may be nearing the end or even a little late to thin Pawnee at this point, but most other cutivars should be thinned within the next 10-14 days if you are considering this.

You will likely see water stage fruit split begin on many cultivars over the next few weeks. Don’t panic. The trees will drop some nuts. The heavier your crop load is, the more it will appear you are losing but this will only last a few days and it will end without significantly impacting your crop.

Don’t forget about shuckworm sprays in mid August and be on the lookout for aphids (especially black aphids) and mites. They will be arriving this month! August is the month that makes or breaks a pecan season and determines the possibility of a return crop the next year.

Water Split is On Way (Lenny Wells)

This is just a reminder that given the recent rain and the stage the pecans are in, if you have not seen it already, you we will likely be seeing water stage fruit split on many varieties over the next couple weeks.

Water stage fruit-split of pecan is often a major problem exhibited by thin-shelled pecan varieties (e.g., Schley, Caddo, Oconee, Sumner, Wichita, Frotscher, and Farley) and, to a lesser degree, by certain relatively thick-shelled cultivars (e.g., 'Cape Fear' and 'Elliott'). The problem occurs when water pressure builds up rapidly inside the nut, causing the shell, seed coat, and sometimes the shuck to split about the time of the initiation of kernel filling and shell hardening, resulting in abortion and drop of damaged fruit about 7 days after splitting.

Water split is highly erratic, with incidence and severity varying depending on cultivar, location, and year. Crop loss can be severe in certain years and nearly absent in others. It occurs during the "late water stage"; a time when turgor pressure inside the nut is high and the shell is beginning to harden. This typically occurs during mid-August for susceptible cultivars growing in the southeastern U.S.

Water split is associated with rainfall occurring at the initiation of shell hardening. There are usually 2 episodes to water split. The major episode is usually triggered by rainfall (or potentially irrigation) and a relatively minor event triggered by "high humidity/low light". Irrigation schedule, shading, and crop load also factor in.

Often, the split is inside the nut and you will simply see green nuts on the ground, which will stain a few days later. Other times when the incident is particularly violent you will see an actual longitudinal split in the shuck itself.

By the time you see water split, there's little that can be done. Crop loss to water split is minimized, but not totally prevented, by managing soil moisture to minimize the severity and duration of water stress during the last two weeks of fruit sizing, and by crop-load thinning. Certain varieties will

always have a potential for it under the right conditions. It seems to be worse when there's been a dry spell and you suddenly get a heavy rainfall or crank up the irrigation all of a sudden.

Water split also appears worse when the trees are bearing a heavy crop load. Therefore it will likely be more noticeable in most orchards this year. Trees with a heavy crop load appear to kick off more nuts with water split but often, the precentage of nuts you lose from a heavily loaded tree is no higher than what you see in "off" trees, you just have more nuts to lose.

Don't panic when you see water split. It is a normal physiological response of the tree to environmental conditions and it will end with much less reduction in yield than it at first appears.

UGA Pecan Team welcomes new pecan entomologist, Dr. Apurba Barman (Lenny Wells)

We would like to extend a welcome the newest member of the UGA Pecan Team—Dr. Apurba Barman!

Dr. Barman's previous position has been as University of California Cooperative Extension IPM advisor at the UC Desert Research and Extension Center in the Imperial Valley.

Dr. Barman earned a bachelor's degree at Assam Agricultural University in India, and master's degrees in Indiana and at Texas Tech University, Lubbock. In 2011, he completed a doctorate degree at Texas A&M University in College Station, where he developed a research program to understand the extent of damage and management of thrips in the Texas High Plains region.

Prior to his position at UC, Dr. Barman orked at the University of Georgia in Tifton as a Postdoctoral Associate and led a whitefly monitoring and management progress across cropping systems in the southern region the state. We are happy to have him back!

Growers will have an opportunity to meet Dr. Barman at the SE Georgia Pecan Field Day in Baxley on August 17 and at the Georgisa Pecan Growers Association Annual Field Day in Tifton on September 8.

Doug Collins
Lee County Extension Coordinator
P. O. Box 589
Leesburg, GA 31763
229-759-6025
229-759-3302-FAX
229-344-8031-cell
collinsd@uga.edu