UNIVERSITY OF GEORGIA EXTENSION

UGA Cotton Team Newsletter
May, 2019

Crop Progress and Assessing Plant Stands for Replanting (Freeman)

As of April 29th, approximately 12 percent of Georgia's cotton crop has been planted according to the USDA NASS crop progress report. This is significantly ahead of our previous five year's average of 7 percent. Although wet through most of the winter and spring, conditions in most parts of the state have become dry, and much of our planted acres tend to be on our irrigated lands. These dry conditions may be favorable for field work however, rainfall is needed if we are to have adequate soil moisture to ensure proper stands on a lot of our dryland acres. Fortunately it looks like we will get some much needed precipitation as the 10-day forecast shows high chances for rainfall for much of our cotton growing regions of the state.

In a perfect world, we would only plant cotton during optimal conditions however, in the real world cotton is often planted in harsh or sub-optimal conditions for a variety of reasons. It is important to check and evaluate your cotton stands soon after emergence so that any decisions on replanting can be made quickly as these decisions can become more difficult as more time passes. One of the first things that needs evaluating is the overall plant population across the field. This can be recorded several ways but a plants/ft average needs to be recorded from several/many different areas of the field to get a good representative sample of the field's plant population. The second part of the stand assessment is noting the occurrence of 3' or greater gaps between plants. A field may have a lower than "optimal" plant population but if most of the plants are evenly spaced then very little if any yield losses may occur. Fields with a high number of 3' or greater gaps have a higher likelihood of lower yield potential and delayed maturity.

When deciding if the current stand is adequate or if replanting will be needed considerations must be taken for the extra costs or seed, fuel, labor, additional herbicides and insecticides as well as hidden costs like the decrease in yield potential from a later planted crop. Other questions that should be asked are: How uniform is the stand across the field? Should I replant the entire field or only spots? If I replant only parts of the field, how will the difference in maturity affect me later in the season with PGR management and defoliation?

The original preemerge herbicides should also be taken into account. If Warrant was used as a PRE, replanting should be delayed for 14 days as long as tillage (strip till equipment) is done and 21 days if no tillage is done to avoid serious injury to the replanted crop.

Herbicides and dusting in cotton can be a mighty challenge! (Culpepper)

Herbicide injury and weed control are both challenging when dusting in cotton and the topic deserves discussion.

The most effective approach to minimize cotton injury from preemergence (PRE) herbicides is to place the cotton seed in moist soil where it can imbibe (absorb) clean water free of herbicides. Next

we need our cotton roots to "out run" the herbicide as the herbicide is moving down into the soil with rainfall or irrigation. When placing cotton seed in dry soil and then applying a PRE herbicide, it is likely impossible for water to get to the seed without being contaminated with the herbicide. However no two herbicides pose the same challenge under these conditions; here are a few thoughts with several products:

1. Reflex moves very effectively in water thus it is the product most likely to reach the seed at higher concentrations. Although that is not beneficial for the cotton seed, it is very beneficial for weed control as the product is activated more effectively with lower amounts of rainfall or irrigation than other cotton herbicides. Additionally, our research has shown Reflex to sit on the soil for 17 days before being activated and then still providing about 90% control of the pigweed emerging after activation.

2. Warrant poses a unique challenge, if the encapsulation breaks down releasing the active ingredient prior the cotton plant emerging then injury can be quite significant. It is the encapsulation of Warrant that provides us the ability to use it "safely" PRE in cotton. Any time one is uncertain of cotton emergence within 5 or 6 days of applying Warrant, one may want to consider other options. Ideally Warrant needs around a half inch of rain for activation and our research has shown it to still be quite effective on pigweed after sitting on the soil and waiting 11 days for activation.

3. Diuron will move down to the seed less aggressively than Reflex but if a heavy rain occurs within a few days of dusting the cotton in and applying diuron, injury will be much greater than normal.

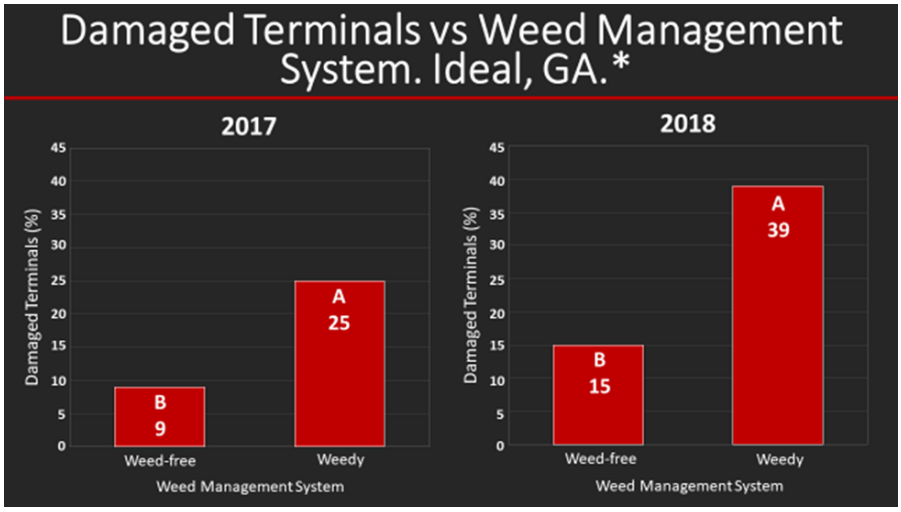
4. Brake likely poses the least damage potential to cotton in this environment but the herbicide may not perform on weeds properly until a half inch or more of rainfall occurs.

Obviously, dusting cotton in and applying PRE herbicides is far from ideal. The next thought from every grower is, of course, I just want apply herbicides after planting. This thought is extremely scary when considering the monumental challenges our family farms face with herbicide resistance in Palmer amaranth. If one does follow this path of not using PRE herbicides, there are several key points to consider. ***First,*** there must be no weeds emerged when the cotton seed is placed in dry soil. In theory, no additional weeds should emerge until it rains. ***Second,*** the first postemergence herbicide application should occur as soon as the cotton is fully emerged (do not wait to see weeds at 70 mph from the road); the treatment must kill emerged weeds (Palmer and spiderwort) and must include residual herbicides. ***Third,*** a second postemergence herbicide application should be made 14 to 18 days later and again include a residual product. ***And finally*** and absolutely essential, is that the layby application is made with hoods or a layby rig improving weed coverage and control while minimizing cotton injury. The layby application should include conventional herbicide chemistry such as diuron, Caparol or Cotoran; also include Envoke if help is needed with morningglory or nutsedge.

Palmer amaranth influences tarnished plant bug infestations in cotton (Culpepper, Roberts, Randell)

After nearly two decades of battling glyphosate-resistant Palmer amaranth, we all clearly understand dozens of reasons why we must aggressively control this weed. However, there may be an additional reason that you probably are not aware of until now.

Cooperative research led by Taylor Randell, our graduate student, has determined this pesky weed not only competes with the crop but also attracts tarnished plant bugs into the field which then feed on cotton plants. Research from 2017 and 2018 (graph below) noted 9 to 15% damaged cotton terminals from plant bugs in plots maintained free of Palmer amaranth. In the same study when Palmer amaranth was allowed to remain in the plot for up to 35 days before removal ("weedy"), damaged cotton terminals ranged from 25 to 39%. Cotton terminal damage from plant bugs influenced by Palmer amaranth caused yield loss at the Macon county site in one of two years.



Conclusion: This exciting research just adds more science behind our decade-long recommendations for managing Palmer amaranth, which include the following: No Palmer up at planting, two effective at-plant residual herbicides used at rates that will not hurt the cotton crop, timely post applications, and finishing the season by improving late-season weed coverage and control, while reducing cotton injury, by applying conventional chemistry through your layby rig or hooded sprayer.

Thrips Foliar Sprays (Roberts)

Thrips are consistent and predictable insect pests of seedling cotton in Georgia. Preventive insecticides are recommended at planting to reduce thrips infestations and seedling injury. Supplemental foliar insecticides are needed in some environments and applications should be based on scouting and thresholds. The need for supplemental foliar insecticide is dependent upon the severity of thrips infestations, the at-plant insecticide used, and the rate of seedling growth.

At-plant insecticide options include in-furrow granule applications of aldicarb, in-furrow liquid applications of imidacloprid or acephate, and commercial seed treatments of imidacloprid, thiamethoxam, and acephate. Imidacloprid seed treatment is the most common at-plant insecticide used. Thrips control and residual activity is greater for in-furrow granules and liquids compared with the seed treatments. We would expect 3-4 weeks activity with in-furrow options and 2+ weeks of activity with the imidacloprid seed treatment.

The Thrips Infestation Predictor for Cotton (TIPs) Tool uses planting date, temperature, precipitation, and knowledge of when and how intense thrips infestations will be to predict risk of thrips injury to cotton for specific geographic locations. For many areas, the tool is predicting thrips infestations to be similar to those observed during 2017 and 2018 which were both relatively low pressure years. The TIPs Tool can be found at the following link: http://climate.ncsu.edu/CottonTIP.

Vigor or the rate of seedling growth influences seedling injury from thrips. Thrips initially feed on the underside of cotyledons; damaged cotyledons will appear silvery on the lower surface of cotyledons. The majority of thrips eggs are laid on the cotyledons and it takes about 5-6 days for an egg to hatch. Once a terminal is present thrips will move to and feed on unfurled leaves in the terminal. As the leaves unfurl and expand the characteristic crinkling and malformations become obvious. A rapidly growing seedling may unfurl a true leaf every 3 days where as a seedling which is stressed may take 4-5 days to unfurl. Again, thrips are feeding on the unfurled leaves so thrips feed for a more extended time on the same unfurled leaf of a stressed plant than a rapidly growing plant. The same infestation of thrips will create more damage on a slow growing plant.

The decision to use a foliar insecticide to supplement at-plant insecticides for thrips control should be based on scouting. Scout thrips by randomly pulling a seedling and "slapping" the seedling against a piece of paper or box to dislodge the thrips. Do this on several plants and determine the average number of thrips per plant. Be observant for immature thrips when making counts. Immature thrips are wingless and crème colored. Adult thrips are usually brownish or almost black in appearance and have wings (depends on species, tobacco thrips is the most common thrips species infesting cotton and adults will be dark brown or black). The threshold for thrips is 2-3 thrips per plant with immatures present. The presence of numerous immature thrips suggests that the at-plant insecticide is no longer providing acceptable control (i.e. thrips eggs laid on the plant, egg hatched, and immature thrips is surviving). Foliar insecticide options include the systemic insecticides Orthene, Bidrin, and dimethoate. Note that these products are systemic. Pyrethroids will not provide acceptable control thrips in cotton.

Economic damage from thrips rarely occurs once seedling reach the 4-leaf stage and are growing rapidly. It is important that we make thrips decisions early in the plants development. Seedlings become more tolerant to thrips feeding in terms of yield potential with every true leaf it puts on. 1-leaf cotton is much more susceptible to yield loss than 3-leaf cotton.

Managing Nematodes in Your Cotton Crop: What you do now affects everything you do later (Kemerait)

We had a very mild winter this year. Mild winters may be nice in reducing our power bill; however extended periods of very cold soil temperatures are essential for reducing nematode populations in the upcoming field season. I don't believe we had enough cold weather this year and it could make nematode problems more severe for our cotton farmers.

If plant-parasitic nematodes are likely to be a problem in a cotton field this season, then the grower has a very brief window of opportunity to effectively manage this pest. Southern root-knot, reniform, sting, and Columbia lance nematodes all damage our cotton crop in Georgia and, while growers may not find management options convenient, protecting the crop from nematodes is an essential step to protecting yield. Nematodes begin to affect the root system of the cotton crop very soon after germination. If the developing taproot and root-system is not protected, then all other production efforts throughout the remainder of the season are compromised as the damaged plants can never fully recover.

There are important steps necessary to reduce the risk of nematodes to a cotton crop and to protect the crop once the seed is planted. It is critical to remember that once the furrow is closed, nearly

every management decision has been made and the grower will have to "live with" the results throughout the season and on to harvest.

Step 1. Practice good crop rotation to reduce parasitic nematode populations in a field. Peanut is an excellent rotation crop for cotton as peanut is not a host for the reniform, Columbia lance, or southern root-know nematodes. Corn is not a host for the reniform nematode. Soybean is a host for the southern root-knot and reniform nematodes; however if a grower planted a "nematode-resistant" variety in the previous season, then the impact of the nematodes on the future cotton crop should be reduced.

Step 2. Take soil samples, optimally in the fall of the previous cropping season, to assess both the types of nematodes and population size in a field. To be able to make the best management decisions, it is important to know not only which kinds of nematodes are in a field, but also how many of them are there. Growers could take samples now that soil temperatures have risen; however nematode counts may still be deceptively low and misleading as far as best management options.

Step 3. Consider planting a root-knot nematode resistant variety, such as DP 1747 B2RF, Phytogen 480 or Phytogen 580. These varieties are not resistant to reniform, sting or Columbia lance nematodes; however they can have a tremendous impact when planted where southern root-knot nematode is a problem. Planting one of these resistant varieties in a field infested with root-knot nematodes will accomplish two things. First, damage from root-knot nematodes will be minimal, if it occurs at all. No nematicides are needed. Second, the root-knot nematodes will be unable to build in the field, so populations will be lower for the next cotton crop.

Step 4. If a grower chooses not to plant a root-knot nematode resistant variety, either because he preferred another, susceptible, variety or because reniform, sting or Columbia lance nematodes were the problem in the field, then he must consider using a nematicides to protect the crop. To make the most informed decision about which nematicides to use, the grower should have some idea about the size of the nematode population in the field. This is best accomplished with results from fall nematode counts. Samples taken in the spring before planting, but after soils warm, could give some information if nematodes are found in the sample. However if nematodes are not found in the sample then this may simply be because they have not yet built to a detectable level following the colder winter months.

Where parasitic nematodes are well-above "threshold" levels, there is no nematicides that can perform as effectively as Telone II (3 gal/A). Telone II is a fumigant that must be applied when the soil is neither too wet or too dry. Typically Telone II is applied 7 to 14 days ahead of planting; however when soil conditions are right and heavy rain is not expected within 3-4 days following planting, Telone II can be applied at the same time as the seed is planted.
In fields where Telone II will not be used, or where nematodes are at a "moderate threat", growers should consider using AgLogic (5-7 lb/A) or Velum Total (14-18 fl oz/A). Both products protect the cotton crop against nematodes and thrips. Though results from nematicide trials are notoriously variable, I am comfortable with the recommendation that Velum Total (16-18 fl oz/A) is gernally equivalent in performance to AgLogic (5 lb/A). Where pressure from nematodes is severe, it is my observation that AgLogic (7 lb/A) offers greater protection than does Velum Total. But, of course, that additional protection comes at a cost.

Seed treatment nematicides, to include AVICTA Complete Cotton, COPeO Prime, Bio ST, Nemastrike all are convenient tactics for managing nematodes; however they may not be enough. I have

significant data for AVICTA Complete Cotton and COPeO Prime and an increasing volume of data for BIO ST. I have limited data for Nemastrike. Seed treatment nematicides are most appropriate for low levels of nematodes in a field. As populations of nematodes increase, the benefit of the seed treatments, as compared to Telone II, AgLogic, or Velum Total, is lost. Also, performance of some seed treatment nematicides in Georgia may not match that reported in advertisements.

I do not have data to show the value of combining use of a seed treatment nematicide with either Velum Total or AgLogic; however I generally do not think any additional benefit in yield will offset the added cost of the combination treatment.

Once the furrow is closed, growers have only one additional treatment option and that is either Vydate-CLV or RETURN XL as a foliar-applied nematicide at approximately the 5th to 7th true leaf stage. This treatment should be in addition to an earlier nematicides treatment and not as a "stand alone" treatment. Results with Vydate-CLV have been mixed, but it seems most promising where reniform nematodes are a problem.