

Cotton Blue Disease and its Implications on Georgia Cotton Production for 2019

An Update from the University of Georgia Cotton Team on March 7, 2019

In the fall of 2018, Cotton leafroll dwarf virus (CLRDV) was confirmed to infect cotton plants in 14 Georgia counties (Figure 1). During the winter of 2019, this virus has already been confirmed to infect cotton regrowth from ratooned cotton stalks and several weeds; even though screening has just begun. This virus is associated to cause blue disease with symptoms that include leaf curling, reddening and drooping of leaves, subsequent distortion of leaf growth above the nodes where reddened leaves were first observed, and shortening of upper internodes and their discoloration to deep green. Some view the symptomology to resemble that often observed with drift from phenoxy herbicides such as 2,4-D, 2,4-DB, and dicamba.

Cotton blue disease (CBD), which is caused by the aphid-transmitted Cotton leafroll dwarf virus, is newly detected in Georgia cotton but has been previously observed in Argentina, Brazil and some regions of Asia and Africa. Although resistance has been bred into cotton cultivars in areas with history of CBD, there are currently no known resistant varieties being planted in the United States. Efforts to bring resistance to varieties which are commercially viable are underway, yet it is clear that introduction will take years. The presence of CBD in the Southeastern US is potentially alarming because of three particular concerns: (1) susceptibility of our cotton crop, (2) size and importance of the crop in Georgia and (3) the widespread presence of aphids which vector the virus. Although it would seem logical to more aggressively control aphids to manage this issue, it just is not that simple as aphids are dynamic infesting a vast array of plant species in varying landscapes. Thus, chemical control methods could actually increase pest management issues (i.e. treating for aphids would likely flare other more nefarious insect populations) without reducing impact from the virus; much more research is needed to better understand this scenario before providing aphid management recommendations.

Although the impact from this virus to the 2019 Georgia cotton crop cannot be scientifically determined, it is important to discuss the situation. Science does not currently support increased

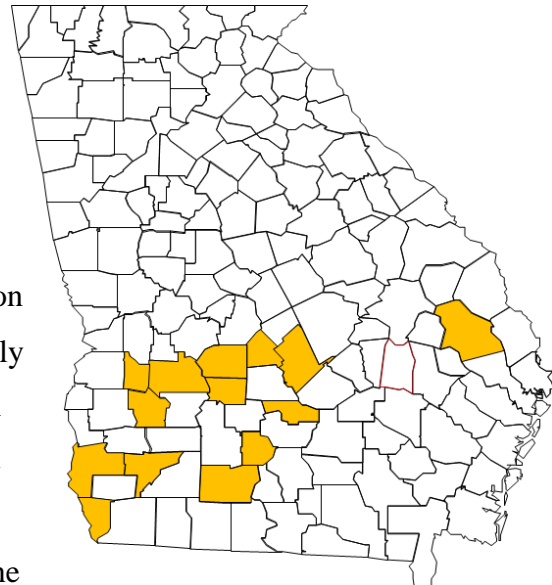


Figure 1. Map of Georgia counties with documented CLRDV (in yellow).

insecticide use to control aphids. However, there may be two approaches that could benefit overall farm sustainability while also possibly reducing impact for CBD including (1) removing cotton stalks from 2018 and (2) controlling winter weeds well in advance of planting.

Thoughts on Removal of 2018 Cotton Stalks – Hurricane Michael devastated much of Georgia’s cotton crop to the tune of over \$600 million in October of 2018. Since that time, few things have improved for growers as continuous heavy rains have delayed harvest as well as often eliminated one’s ability to remove cotton stalks from fields. Cotton stalks surviving the very mild winter are already showing new growth which is a concern for several reasons including actually becoming weeds that will steal (1) sunlight, (2) summer soil moisture, and (3) nutrients; as well as potentially being an unwanted host for nematodes and insects.

Since the cotton leaf roll dwarf virus has already been detected on ratooned cotton in 2019, it seems logical that killing these cotton plants may also be beneficial. By controlling these plants, the reservoir for cotton leaf roll dwarf virus may be lessened. The longer interval between controlling these plants and planting the greater the potential positive impact.

To control ratooned cotton stalks, traditional methods of disking or using a stalk puller offer the best opportunities. However, it is critical to note that the tillage operation must completely kill the cotton plants. Partially removing the stalk from the soil may not prove effective. It should be noted that cotton plants are still alive in some fields where stalk pullers were run. Thus, make sure that stalks are pulled entirely out of the ground.

Although herbicides can be used to control cotton emerging from seeds, options are far less effective when trying to control ratooned plants. The use of 2,4-D on non-2,4-D tolerant cotton is the best option. To control 2,4-D tolerant cotton, the use of dicamba would be the best option although less effective than that of 2,4-D on non-2,4-D cotton. The addition of flumioxazin (Valor, etc) mixed with these auxin herbicides would be beneficial. Additionally, these herbicide mixtures likely will not provide full control of ratooned cotton, so a follow up application of Gramoxone + Aim + diuron would be in order; although again some cotton is expected to survive. *Use the maximum labeled rate for each product applied and make sure to follow all label plant back intervals before planting the 2019 crop.*

Killing Winter Weeds – Producers planting into fields infested with winter weeds face numerous challenges. Weeds common throughout Georgia are masters of (1) stilling moisture from the soil thereby preventing one from forming an ideal plant bed and often eliminating uniform cotton emergence, (2) releasing allelopathic properties as it dies which can harm cotton (example - wild

radish), (3) stealing nutrients, and (4) serving as a host (green bridge) for insects to potentially remain in the field at healthy, significant populations to then move onto the cotton once it has emerged. Thus, to prevent each of these issues standard weed management practices for DECADES has been to control weeds at least three weeks prior to cotton planting.

The detection of cotton leafroll dwarf virus in henbit during the winter of 2019 provides another reason to control winter weeds prior to planting cotton. With little to no knowledge of how this virus may move from weeds into the cotton crop via aphids, it seems reasonable to be aggressive and control weeds as soon as possible to break the “green bridge” that may serve to carry a virus source into the cotton crop if not controlled.

Numerous herbicide options can be used to control weeds for cotton burndown in Georgia. Of course, herbicide selection should be matched with individual weeds present. However in general, several very effective herbicide mixtures are generally the most common and most effective. The single most effective mixture state wide would be glyphosate + flumioxazin (Valor, etc.) + 2,4-D; the greatest weakness with this mixture would be glyphosate-resistant horseweed. Roundup + flumioxazin + dicamba is also very good, but the mixture is less effective than the 2,4-D mixture on wild radish; although more effective on horseweed (or fleabane). For those growers not wanting to use 2,4-D or dicamba, glyphosate + flumioxazin offers fair to good control of most winter annual weeds with excellent residual control for at least four weeks if the flumioxazin is activated by rainfall or irrigation. *Make sure to follow all label plant back intervals before planting the 2019 crop.*

In summary, there is a new virus that **COULD** attack our cotton crop. The UGA Cotton Team is working diligently to obtain as much information as possible and is currently developing research strategies for 2019. At this point we know that the virus is present in living cotton stalks and henbit. Therefore, one could consider it prudent to consider trying to eliminate a source of the virus, especially considering the practices are already endorsed and encouraged anyway. If you have any questions, feel free to contact your local county extension agent and visit the UGA cotton webpage for more information.

Sincerely,

The UGA Cotton Team

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