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Better Days Ahead?

Let's face it, the last 2 years have not been easy. But things appear to be looking up — as I write this COVID rates are down, vaccination rates are up, and in-person activities are slowly coming back. So, with this in mind the Mississippi blueberry education workshop will be held (we hope) in Hattiesburg next year (date TBA). In addition, based on the responses we had last year, we will also have an online, virtual workshop with speakers from outside Mississippi. The great thing about virtual workshops is that we can hear from anyone, anywhere in the world and not need to pay for their travel to Mississippi! I know times are tough in the blueberry industry right now, but we can find silver linings and hope that next year will “right the ship”. Fingers crossed. Read on, and I look forward to seeing you soon.

2022 Annual Blueberry Education Workshop

The Mississippi State University Extension Service will be hosting 2 workshops for blueberry growers in 2022 — an in-person workshop in Hattiesburg and an online workshop . The dates and times are still to-be-determined for the in-person workshop. **The Virtual workshop will be January 27 from 2-4pm.**

Right now things are in the planning stages with more information to follow.

If you have received this newsletter via email, you will get notification of the workshop details. The workshop will also be advertised via other outlets as well. Stay tuned for more information.

Look on Pages 2-4 for information on committed virtual workshop speakers and their topics.

2022 Virtual Blueberry Workshop Speakers



Dr. Lisa Wasko DeVetter

Associate Professor, Small Fruit Horticulture

Department of Horticulture

College of Agricultural, Human, and Natural Resource Sciences

Washington State University NWREC and Everett

Title: Optimizing pollination in blueberry - hive density, placement, and landscape features

Description: Many blueberry growers utilize honeybees for pollination services. However, data-driven recommendations on how to optimally deploy honeybees are sparse. This presentation will highlight collaborative research on how hive density, placement, and landscape features impact pollination in blueberry.

2022 Virtual Workshop, cont.



Dr. Lynn Sosnoskie

Assistant Professor,
School of Integrative Plant Science Horticulture Section
Cornell AgriTech

Title: Novel Technology for Weed Control in Fruit Crops: What's in the Works

Description: Weeds are a significant threat to crops, directly, because of resource competition. Indirectly, weeds may serve as alternate hosts for pests and pathogens, interfere with the deposition of crop protection chemicals, and impede harvest. Weed management across US cropping systems is largely reliant on herbicides. The evolution of herbicide resistance, regulatory hurdles, and changing public perceptions about pesticide use has facilitated interest in novel tools for the control of unwanted vegetation. This talk will discuss the results of a nationwide survey to identify grower interests with respect to up-and-coming technology, present preliminary results from ongoing trials evaluating electric weeders and precision sprayers, and describe 2022 research plans.

2022 Virtual Workshop, cont.



Dr. Gerando Nunez

Assistant Professor of Horticulture
Horticultural Sciences Department
University of Florida

Title: Root growth patterns of southern highbush blueberry grown in pine bark beds

Description: Root abundance and nutrient uptake efficiency vary throughout the season in perennial crops. We studied the root systems of southern highbush blueberry cultivars ‘Emerald’ and ‘Farthing’ using a combination of farm and laboratory measurements. We identified periods with high root growth and periods with high root turnover, which have important implications for blueberry irrigation and fertilization.

Algal stem blotch of blueberry

Jonathan E. Oliver, Fruit Pathologist, Department of Plant Pathology, UGA-Tifton
Renee Holland, Area Extension Agent – Commercial Blueberry, UGA Extension, Alma, GA

Current Situation

Wet weather across Georgia's blueberry production belt during 2021 has led to some usual and some unusual disease issues in recent months. Through mid-September, 2021 rainfall in Alma, Georgia is running about 12 inches above normal, and rainfall in Homerville, Georgia is over 16 inches above normal. Phytophthora root rot is one of the most frequently diagnosed disease issues on Georgia blueberries, and since very wet conditions favor the development of this disease, it comes as no surprise that we are seeing significant problems with Phytophthora root rot across the southern part of the state at this time. Alongside these reports of Phytophthora, however, we have been receiving reports of another disease issue that Georgia blueberry growers may be less familiar with: algal stem blotch. In contrast to the fungal, bacterial, or viral diseases that typically afflict our crop plants, algal stem blotch, as the name indicates, is actually caused by a species of parasitic alga. This, in and of itself, makes it an oddity in the disease world, and it is not something that has been frequently reported in Georgia blueberry fields previously.

Causal Organism and Disease Cycle

Algal stem blotch is caused by the parasitic algal species *Cephaleuros virescens*. This species is known to cause disease in tropical and subtropical climates worldwide on numerous plant species, including tea, coffee, and coconuts. In the southeastern U.S., this algal species causes a leaf spot on magnolia and camellia leaves (algal leaf spot) and is also the cause of orange cane blotch (orange felt disease) on blackberries. While orange cane blotch has been a major issue that Georgia blackberry growers have been routinely dealing with for years, the occurrence of algal stem blotch on blueberry has generally been sporadic in Georgia. However, algal stem blotch is an issue that Florida blueberry growers have been dealing with for a while now.

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Algal Stem Blotch on Blueberry, cont.

In Florida, algal stem blotch is primarily a significant issue on southern highbush blueberries during wet, humid conditions. As an algal species, water is critical to the life cycle of *C. virescens*, and the spore-producing structures (sporangia) of this species (Figure 1) produce zoospores that are motile in water (i.e. are capable of “swimming”). As a result, rainsplash and wind-driven rain are believed to be critical for the spread of this pathogen to susceptible host tissue. In addition, stress caused by insects, mites, and diseases, as well as environmental stress, has been suggested to predispose plants to infection with this alga.

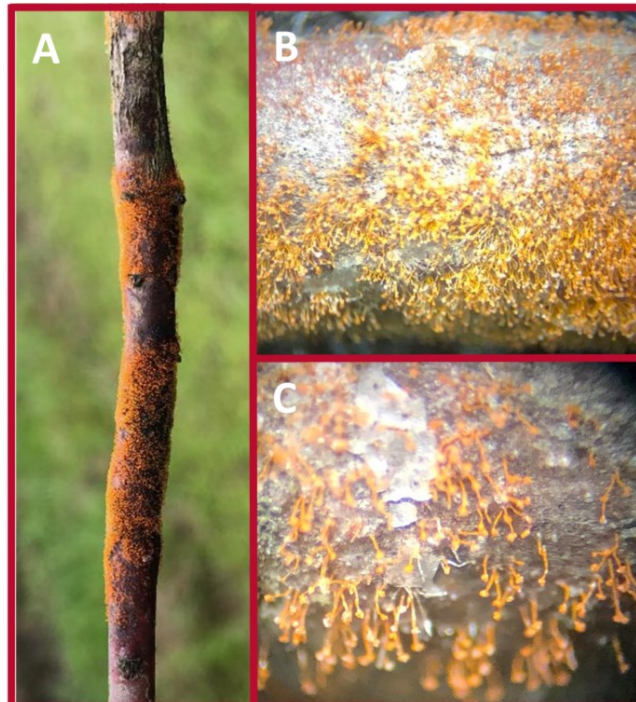


Figure 1. Sporulating algal blotches on blueberry stems: (A) Bright-orange mats of algal sporangiophores emerging from stem surface, (B & C) Close-ups of algal sporangiophores. Photos from Jake Price, UGA Extension Coordinator, Lowndes County.

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Algal Stem Blotch on Blueberry, cont.

Symptoms

As the name indicates, algal stem blotch causes red blotches that appear on the juvenile stems of blueberry plants. These blotches are the result of the alga growing beneath the stem cuticle (the outermost waxy layer of the stem). As infected stems age and become woody, these lesions may be less obvious until the alga sporulates through the bark, forming felt-like mats of bright orange sporangiophores (algal spore producing structures) (Figure 1). In addition to these bright orange mats, the other striking symptom of algal stem blotch on infected stems is chlorosis (yellowing) or bleaching (whitening) of leaves (Figure 2). While this chlorosis/bleaching can resemble nutrient deficiencies or other disease issues, it can have a more irregular (less uniform) and “blotchier” (sometimes speckled) appearance on affected leaves. Furthermore, it is not uncommon for chlorosis/bleaching to occur on only a few infected stems, rather than uniformly affecting the entire plant. The chlorosis/bleaching is believed to result from a toxin produced by the alga that is released into the infected stem, however this remains unproven. Plants severely affected by algal stem blotch can lack vigor and fail to regrow after summer pruning, and defoliation of affected stems can occur. Work that we’ve done on blackberries in Georgia has shown that the algal blotches caused by *C. virescens* on affected canes can crack open, providing wounds for other disease-causing organisms to gain entry to the plant. Likewise, observations of affected blueberries in Florida have suggested that stems cracked and damaged by algal stem blotch are more susceptible to *Botryosphaeria* stem blight and plant death.

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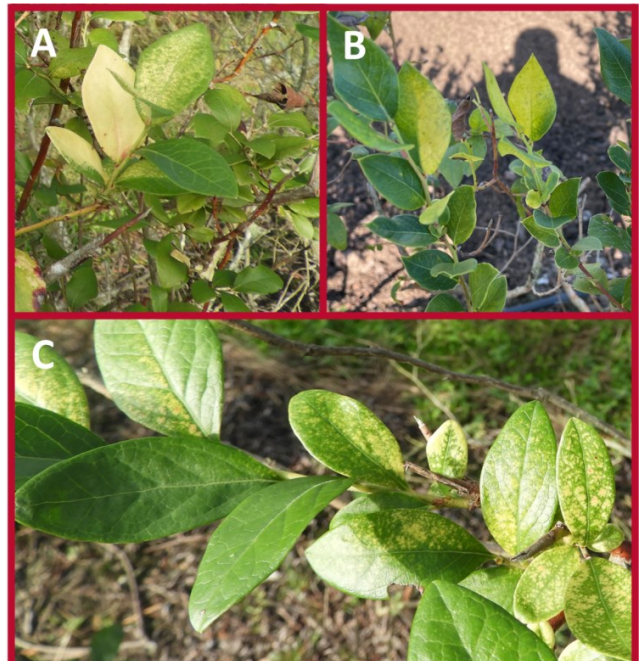


Figure 2. Chlorosis and bleaching of leaves on stems infected with algal stem blotch. Photos A & C from Shae Taylor, UGA Graduate Student; Photo B from Brian Hayes, UGA Extension Coordinator, Mitchell County.

Algal Stem Blotch on Blueberry, cont.

Management

Very little information exists regarding the control of algal stem blotch on blueberry. Since this disease is caused by an alga rather than a fungus, it is unlikely that most fungicides will be effective for management. Recommendations from the University of Florida (<https://edis.ifas.ufl.edu/pdf/PP/PP34400.pdf>) suggest that sprays with copper-containing fungicides (Table 1) can help to reduce algal sporulation and thereby protect healthy canes from infection. However, these products are not useful for eradication of the disease or elimination of existing symptoms.

Table 1. Copper fungicides¹ recommended for management of algal stem blotch of blueberry in the 2019 Florida Blueberry Integrated Pest Management Guide.

Product	Amount of Formulation per Acre	Efficacy	Re-entry Interval (REI)	Pre-harvest Interval (PHI)	Comments
Kocide 3000 (Copper Hydroxide)	1.75-3.5 lb	Fair	48 hours	0 days	Make applications after harvest on a monthly interval following bacterial canker use instructions. Ensure good cane coverage and canopy penetration. Do not mix with Alette, any phosphonate fungicide, or any acidifying agents. ² Do not exceed 28 lb. per acre per year. Copper products only provide preventive management of algal stem blotch.

¹Many formulations and products that contain copper are labeled for use on blueberry at various rates and application intervals. Carefully follow all label instructions for any product to avoid phytotoxicity. Algal stem blotch is not likely to specifically appear on the labels, but when applied for control of other disease issues, suppression of algal stem blotch has been observed.

²See the Kocide 3000 label for additional precautions and instructions. Severe phytotoxicity may result if this product is applied in a manner that is inconsistent with the label instructions.

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Algal Stem Blotch on Blueberry, cont.

Given the fact that algal stem blotch has not been previously widespread in Georgia, no trial work has been done to examine the efficacy of chemicals for management of algal stem blotch of blueberry. In recent years, work on blackberries with orange cane blotch (which is caused by the same algal species as algal stem blotch of blueberry) has shown that foliar applications of ProPhyt (potassium phosphite) can reduce both the size and number of stem blotches on developing canes by up to 90%; however, it would be premature to speculate on the use of this product for algal stem blotch control on blueberries at this time. There is simply no data available. Nonetheless, given that ProPhyt (and other phosphonate fungicides such as K-Phite, etc.) are routinely used in blueberry production in Georgia during the summer and fall for the effective management of leaf spots and *Phytophthora*, future trial work may determine if foliar applications of these products can also reduce issues with algal stem blotch.

Future Outlook

The dramatic increase in reports of algal stem blotch that we've experienced this year is probably due, in part, to the extremely wet summer that we've had across southern Georgia's blueberry belt, and it is likely that in a more typical (drier) year we will see less issues with this disease. Nonetheless, algal stem blotch has become a significant issue for Florida blueberry producers in recent years and anecdotal observations suggests that this disease has been creeping northward for some time. Furthermore, given how widespread and consistent the issues have become in recent years with another disease (orange cane blotch of blackberry) caused by this same algal species, it is apparent that this alga can thrive in our environment. Accordingly, it is recommended that Georgia blueberry growers familiarize themselves with the symptoms of algal stem blotch and contact their local agricultural extension agent if they need information regarding the diagnosis and management of this emerging disease issue.

Original article source: Dixie Blueberry News and <https://site.caes.uga.edu/blueberry/2021/09/algal-stem-blotch-on-blueberry/>

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Feedback Requested!

Eric Stafne, MSU-ES

This issue represents the final issue for 2021. I have had a lot of fun putting these newsletters together and I hope they are useful and educational for you.

As with many of our Cooperative Extension activities, feedback from those receiving information is very important. Therefore I would like to extend this opportunity to all who read this newsletter (and any of the past newsletters) to tell me what you liked about it or what needs to be improved.

Any feedback can be sent to me at eric.stafne@msstate.edu. I will read any response that I get and go through it carefully so that the next volume in 2022 is even better.

Thanks for reading the award-winning Mississippi Vaccinium Journal.

