

# Integrated Pest Management Program

## Monthly Newsletter

Ash Sial  
IPM Coordinator

Emily Cabrera  
IPM Communications  
Coordinator

[IPM@uga.edu](mailto:IPM@uga.edu)

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## SPECIALIST SPOTLIGHT

Get to know the specialists stationed throughout the state of Georgia that make up the IPM Program.

### Brett Blaauw

CAES Athens Campus  
463 Biological Sciences | Athens, GA 30602



Originally from Southwest Michigan, Dr. Brett Blaauw has always taken an interest in the applied aspects of entomology, and knew early in his academic career that he would focus on research that would support farmers. As such, Blaauw earned his Bachelor of Arts in Biology from Kalamazoo College where he focused on the interactions between ladybeetle predators and milkweed aphids that sequester plant chemical defenses. He went on to earn his Master's degree in Science from Western Michigan University where he completed a thesis on the dynamics and impact of chemical defense expression in plant-aphid-coccinellid interactions. He then pursued his PhD at Michigan State University where he evaluated plant composition and habitat size on the effectiveness of native plant conservation strips for sustainable enhancement of beneficial insect communities and their ecosystem services in agroecosystems. After receiving his doctorate, Blaauw moved to New Jersey to work in the Tree Fruit Entomology lab as a post-doctoral research associate where his work focused on evaluating the behavior and potential management tactics

for the invasive brown marmorated stink bug, an invasive insect pest that has a wide range of hosts and has become an increasingly more challenging agricultural pest of fruits and nuts in the southeast.

With an impressive academic repertoire under his belt and with a bit of luck, Blaauw was hired with a unique dual appointment as an assistant professor and Extension specialist for both the University of Georgia and Clemson University. As the regional peach entomologist for Georgia and South Carolina, Blaauw maintains research plots in both states, and provides trainings and information to Extension agents and growers in both states. Blaauw's Extension responsibilities in Georgia also include apples and grapes. Blaauw is part of a team of researchers from various southern land grant universities that provide critical updates to the annual Southeastern Peach, Nectarine, and Plum Pest Management and Culture Guide. He is also a contributor to the MyIPM Smartphone App, a free app that provides integrated pest management strategies for commodity crops on insects, diseases, and weeds in the southeast.

Currently, Blaauw's research in his fruit entomology lab is focused on the dynamics of integrating insect behavior and ecology to more effectively and sustainably manage insect pests. "Our work attempts to highlight effective ways of managing insect pests while minimizing the impact we have on non-target species, such as natural insect predators and pollinators. By applying more targeted approaches in pest management we are better able to protect the beneficial insects in a system, thereby encouraging long-term sustainability of the land and improving cost efficiency for farmers. ■

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Submission deadline for the December newsletter is November 25, 2019. If you would like an article written about an upcoming event or project, please email [ipm@uga.edu](mailto:ipm@uga.edu).

## FEATURED CREATURE

### Brown Marmorated Stink Bug

*Halyomorpha halys*  
(Stål)

#### Description:

Immature stages – Eggs of BMSB are light green/ blue in color, 1 mm in diameter, and laid in clutches of approximately 28 eggs. Eggs usually located on underside of leaves of host plants. As embryo develops it may become visible through the egg, with eyes appearing as two red spots. First instar nymphs are approximately 2.4 mm in length, with black head and thorax and orange-red abdomen. Following transition to second instar, nymphs lose majority of their orange-red coloring. Second instar nymphs appear dark, with rough spiny projections along lateral edge of thorax. Wing buds begin to develop with each successive molt. Later instars have black to gray base coloration with noticeable spines along humeral margins, as well as white bands on legs and antennae.

Adult stages – Adults are larger than most native stink bug species, ranging from 12 to 17 mm in length. Base color is mixture of brown, dark red and black on dorsal surface, with beige or cream-colored ventral surface punctuated with metallic green markings on ventral thorax. Key features for identification include white bands on antennae and legs, no humeral (shoulder) spines, and alternating dark/light bands on margin of the abdomen.

#### Biology:

Life Cycle – Development from egg to adult takes approximately 40 to 60 days, depending on temperature and photoperiod. After hatching, first instar nymphs aggregate around egg clutch before molting and dispersing to feed. Adults produce multiple egg clutches throughout lifespan. Winter diapause is a crucial component of BMSB life cycle. BMSB respond to shortening daylength during fall by entering into diapause. During this period adult reproductive activity ceases as stink bugs conserve resources to survive winter. Only adults enter diapause and survive through winter. Increased temperatures and daylength in spring signal end to dormant

period and adult brown marmorated stink bugs will leave overwintering sites in search of food. In warmer climates several generations per year possible, though in most of its North American range BMSB has one to two generations per year.

#### Damage to Crop:

During outbreak years significant losses seen in apples, peaches and pears. Vegetable producers experience loss, with feeding reported on sweet corn, beans and tomatoes. Row crops such as field corn and soybean have also been affected, with damage near field margins adjacent to wooded areas that serve as habitat for BMSB. Appearance of crop injury varies depending on crop type. Feeding on tree fruit, nuts and some vegetables can lead to corky spots in flesh directly below the feeding site. Feeding can also cause discoloration, necrosis or chlorotic spots due to tissue damage. Feeding on developing fruit, particularly peaches, can cause cat facing. In most cases feeding by nymph and adult stages renders the fruit unmarketable.

#### Management:

Management has primarily relied on use of broad-spectrum insecticides. Because pesticides that are most effective against BMSB are often toxic to pollinators and beneficial insects, strategies to reduce pesticides used for control have been developed, such as border sprays, which take advantage of increased pest densities observed on border rows of crops, especially when adjacent to forested areas. Growers achieve good control by directing sprays where pest populations are highest, reducing amount of pesticides in lower density areas. Discovery of aggregation pheromone has led researchers to design lures which attract BMSB to vicinity of lure. Combined with traps (black pyramid and sticky traps), lures allow growers to determine when populations are at levels that warrant pesticide applications. ■



BMSB damage on apple, photo by Tracy Leskey, ARS USDA

## FROM THE FIELD

Articles and news stories pertaining to IPM field work written by IPM members.

### Green Shucks, Sticktights, and Poor Kernel Development

by Lenny Wells, University of Georgia Extension Pecan Specialist

It's that time of year that pecan growers are out shaking their trees, hoping for a better harvest from last year's devastating blow from Hurricane Michael. As this year's harvest season is progressing, growers are seeing problems with many early varieties. As growers shake trees many green nuts are falling out still in unopened green shucks. This has been especially noticeable in Pawnee and Oconee, although other varieties have exhibited similar problems as well. Most of these nuts are found to be pops, have poor kernel development, or have sprouted in the shuck.



A similar problem occurred in 2015, primarily on Oconee. During that year, many of the nuts within the shucks harboring kernels had degraded to a gelatinous mass. The same problem has been observed this year, along with poorly developed kernels, and vivipary - or sprouting - and embryo rot. As a result, some wagon-loads have been weighing lighter than expected as they are cleaned and the bad nuts are kicked out.

The green shucks, or sticktights, are indicative of some kind of stress. When there are no obvious signs of insect or disease, the culprit is usually drought and heat stress, as has been the case during September and October this year. Pecans require water right up until the time of shuck split to reduce this problem. Nuts sprouting in the shuck before harvest (vivipary) are also reduced by late season water and/or stress reduction. While we do not yet know the exact cause of the problem, it is widespread across

the state, which strongly suggests that the problem is environmental in nature. In pulling out environmental data from 2015-2019 and comparing these with the remaining years, it appears that early crop maturity and a hot, dry September were conditions these two problem years had in common. Early crop maturity generally results from early budbreak due to high chilling units below 39 degrees in winter and high heat units in spring, which advances shoot elongation and flower development.

In addition, we know that vivipary and embryo rot (both of which are different stages of the same problem) occur in higher percentages under conditions of high temperatures and high moisture inside the shuck in August/September. Self-pollination also results in higher vivipary and embryo rot. Thus, this may play a role in what we are seeing. The rotten, gelatinous kernels could just be a further degradation of the kernel as it rots.

Oconee nuts were collected from two locations (an orchard near Marshallville and the UGA Ponder Farm). At both locations nuts within green sticktights exhibited the following kernel categories in the approximate percentages you see below:



- Green Stick-tight and Poorly developed kernel: 63%
- Pre-Germination or Vivipary: 20%
- Nut Loose in Shuck, shell darkened normally and good kernel: 8%
- Nut loose in shuck with good kernel but coloring not complete: 8%



Dr. Patrick Conner, a pecan breeder at the Institute of Plant Breeding, Genetics and Genomics on the Tifton campus, is currently running DNA analysis on these nuts to determine parentages. This will allow us to determine if the trees were self-pollinated or cross-pollinated. Depending on the results, the problem could easily be addressed by planting additional early and late pollinator varieties in the orchard to ensure better coverage of the full pollination window. If self pollination is not evident, then environmental conditions may be the most significant contributor, for which not much can be done.

More information on this issue will be posted to the Extension Pecan Blog as data becomes available in the coming weeks. ■

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## MEDIA MENTIONS

Articles and news stories pertaining to IPM field work written by outside sources.

### Tomato Spotted Wilt Virus a significant problem for peanut producers in 2019

by Clint Thompson

University of Georgia Cooperative Extension plant pathologist Bob Kemeraut cautions Georgia peanut producers in the midst of harvesting this year's crop that it's never too early to look ahead to 2020, especially with regards to tomato spotted wilt virus (TSWV).

The virus, which caused widespread devastation to Georgia's peanuts in the 1990s, had a major impact on this year's crop. Kemeraut attributes rise in TSWV incidences in part to complacency on the part of Georgia farmers.

"I think our growers are forgetting about how bad spotted wilt can be. For that reason, rather than considering all of the management tactics in the Peanut Rx tool, they're sometimes taking easier, maybe cheaper options because of other financial considerations they might have," Kemeraut said. "In 2020, I'm encouraging growers to recognize that we had a significant problem with spotted wilt this past year."

Fortunately for Georgia farmers, TSWV was not as bad this year as in 1997 when the value of the state's crop was reduced by more than 10%. But the potential is there for the virus to become widespread again if producers don't consider appropriate management strategies.

Kemeraut reminds farmers that all of their TSWV management decisions should be made once their 2020 seed has been planted.

"For the next 140 days, they've got to live with those decisions," Kemeraut said. "When they close the furrow, they've already decided the planting date, the variety, the tillage, the seeding rate, what thrips management product to use. They've got to live with that for the rest of the season."

Most growers understand that TSWV is vectored by thrips, tiny insects that can spread the virus



by feeding on infected plants. Infected thrips transmit the virus when they move to feed on healthy plants. The virus can dwarf plants and cause significant reductions in peanut yields.

While there are several products that growers can use to manage thrips, Kemeraut notes that Thimet, applied in furrow, is the only insecticide that can both manage thrips and reduce the incidence of TSWV.

"Only one product, Thimet, has been shown to control thrips and also minimize the impact of the spotted wilt intensity. It activates the plant's defenses and the plant is able to fight spotted wilt better than others," he said.

TSWV dates back 40 years to when it was first discovered in peanuts in Texas. It was later found in Louisiana and Alabama and was detected as a major problem in Georgia-grown peanuts, vegetables and tobacco in the 1990s.

Resistant cultivars developed by UGA peanut breeder Bill Branch reduced the virus' impact on peanuts over the next decade, but there has been a change in recent years.

"I would say that 2019 has been a wake-up call for tomato spotted wilt. It's an alarm going off. Because of our new varieties and because of our management, we've been able to keep this disease at bay, but 2019 has shown it has not gone anywhere. It is still there and we need to continue to be vigilant and protect ourselves against it," Kemeraut said. "Immature peanuts will mature up at some point. There's no guarantee whatsoever. We can make a choice but it's a hard one. The later it gets, the more risky it gets."

One positive outcome of the recent dry weather is that it has created perfect conditions for farmers who are in the process of harvesting their peanuts. Peanuts in irrigated fields are drying very quickly after being dug out of the ground. According to Monfort, it usually takes five to seven days for peanuts to dry. That has been reduced to three to four days.

He estimates that 15% to 20% of this year's crop has already been harvested. ■

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## MEDIA MENTIONS

Articles and news stories pertaining to IPM field work written by outside sources.

### UGA peach specialist Dario Chavez encourages farmers to water trees, especially during prolonged dry period

by Clint Thompson



*Irrigating trees, especially fruit and nut, is critical during the fall and winter months and especially so during drought years. Supplemental irrigation helps avoid a wide range of problems associated with drought and heat stress. Photo: Lenny Wells, Extension Pecan Specialist*

A drought that has spanned multiple months has University of Georgia peach specialist Dario Chavez concerned that peach trees in Georgia may suffer from lack of water.

Even during the fall, mature peach trees need approximately 15 gallons of water per tree every day. Younger trees need about two-thirds of that amount. As fall moves into winter, those water requirements will decrease.

Though Georgia has received some rain over the past couple of weeks, 103 counties in the state were declared at Level 1 drought response, according to UGA Agricultural Climatologist Pam Knox.

"Although the fruit is far gone from the peach trees right now, trees are still growing. If we don't

have water available, we're not keeping the trees and their fruiting wood in optimal conditions, and this is what produces the fruit for next year," said Chavez, who is based on the UGA College of Agricultural and Environmental Sciences campus in Griffin, Georgia. "Although we focus mostly on the fruit when it's available on the tree, we have to focus on the tree health overall, too."

Chavez believes it's easy, once peach season ends in early August, to forget about irrigating peach trees during the off-season. If irrigation in the orchards is not managed properly, it could impact the peach crop the following year.

"One of the main factors with tree health is the availability of water for the tree. That's why I try to remind the growers that, although we don't have fruit available, we still need to water because those trees have a water requirement," he said.

Chavez says that if the trees don't have sufficient water, they will quickly show signs of stress that can affect the fruiting wood and fruit development.

According to [georgiaweather.net](http://georgiaweather.net), UGA's automated weather network, the drought was especially impactful on areas of the state where the bulk of peach production occurs. In Fort Valley, Georgia, located in middle Georgia, only 3.9 inches of rain and 11 rainy days were recorded between Aug. 10 and Oct. 10. This is down considerably from the 7.92 inches and 20 rainy days registered during the same time period in 2018. According to the UGA Center for Agribusiness and Economic Development, peach production netted \$8.8 million in farm gate value in 2016 in Peach County.

In Gainesville, Georgia, located in the north central part of the state, only 1.9 inches of rainfall and eight rainy days were recorded during the same timeframe. Peach production in the area netted \$490,000 in farm gate value in 2016. ■

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## MEDIA MENTIONS

Articles and news stories pertaining to IPM field work written by outside sources.

### Georgia Farm Bureau supplies grant for UGA-Tifton plant pathologist to study blueberry disease

by Maria Sellers

A plant pathologist at the University of Georgia Tifton campus is using a grant from the Georgia Farm Bureau to study a bacterial disease that is harming the state's blueberry crops.

Jonathan Oliver, an assistant professor in the Department of Plant Pathology in the College of Agricultural and Environmental Sciences at UGA-Tifton, says the \$7,000 grant will fund his studies of a new strain of the bacterial pathogen *Xylella fastidiosa*. While this grant supports blueberry research, the pathogen can also affect other crops such as grapes, peaches and pecans, as well as oak and elm trees.

The pathogen clogs the xylem, or the conductive tissue of the plant, which is essential for water and nutrient transport. As a result, the infected crop will often show symptoms like leaf scorching or drying, which can be mistaken for drought damage.

Since *Xylella* is a leading cause of plant death in southern highbush blueberries in Georgia, it is important for Oliver to study the pathogen to help prevent crop loss. The known strain of *Xylella* affects yields and fruit quality, which impacts profits.

Oliver says his study of bacterial leaf scorch on blueberries led to his discovery of this new strain of the pathogen.

"We were doing genetic work on the pathogen to understand how the pathogen within our blueberry fields relates to the pathogen elsewhere," he said. "It was through this work that we realized that we had identified a new strain of *Xylella* that had never been seen on blueberries before."

As a result of this finding, he wanted to make



*Since Xylella is a leading cause of plant death in southern highbush blueberries in Georgia, it is important for Oliver to study the pathogen to help prevent crop loss.*

sure that this new strain wouldn't have more of a detrimental effect on the crop than the known strain.

"As bacteria recombine with one another, it can lead to new strains that have different properties entirely," he said. "Xylella is known for exchanging genetic information, which can ultimately lead to more potent strains. We were concerned that this new strain might be able to go to different hosts, or different varieties of blueberries specifically, and possibly cause more severe symptoms."

The grant, which also funds lab-based DNA testing, allows Oliver and other researchers to assess how widespread the new strain

of *Xylella* is, how severe it is in comparison to the known strain, and how to determine management options. Tests are being performed in greenhouses to demonstrate how likely the pathogen is to infect different blueberry varieties. Oliver appreciates Georgia Farm Bureau for supplying the grant and providing him with the opportunity to study the pathogen, so that the problem doesn't continue to worsen.

"We hope through the relatively small studies we've been able to do on this pathogen (because of the grant), we can better understand the threats to blueberry production in the Southeast," he said. ■

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## FUNDING OPPORTUNITIES

Potential grant options for IPM field work.

### Southern SARE On-Farm Research Grants

*Call for proposals now open, deadline is Friday, December 6, 2019*

On-Farm Research Grants offer \$15,000 for up to a 2-year project for Extension agents, university researchers, NGOs, and government personnel who currently work with farmers and conduct on-farm research with at least one farmer/rancher cooperator. Emphasizing relationship-building between researcher and farmer, this grant has no preproposal requirements, nor are applicants asked to demonstrate specific outcomes in an intensive way. Proposals are easy to write and straightforward to manage, with simple reporting requirements. For more information, please visit their [website](#). ■

### IPM Enhancement Grant

*Call for proposals now open, deadline is Monday, December 2, 2019*

The Southern Integrated Pest Management Center is pleased to announce the release of the 2020 IPM Enhancement Grants Request for Applications (RFA). All projects must further our mission, which is to foster the development and adoption of Integrated Pest Management (IPM), a science-based approach to managing pests in ways that generate economic, environmental, and human health benefits. For more information, please visit their [website](#). ■

### Friends of IPM Award 2020 Nominations

*Call for nominations deadline is Monday, December 9, 2019*

Each year, the Southern IPM Center recognizes those with extraordinary potential to contribute to the development and implementation of research, extension, or implementation of Integrated Pest Management (IPM) in the Southern Region of the United States. The award program generally gets submissions from college deans, department heads, and other administrative personnel who are not involved directly in IPM programs but may interact or supervise students or faculty who are involved in IPM research or extension. For more information, please visit their [website](#). ■

### AFRI Foundational and Applied Science Program

*Applications due December 13, 2019*

The AFRI Foundational and Applied Science Program supports grants in six AFRI priority areas to advance knowledge in both fundamental and applied sciences important to agriculture. Priority areas are: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Bioenergy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. Research-only, extension-only, and integrated research, education and/or extension projects are solicited in this RFA. For more information, please visit their [website](#). ■

## UPCOMING EVENTS

### THIS MONTH

Nov 12 - [Green Industry Update: Turf](#) | 9:30AM - 3:30PM | Roswell, GA

Nov 12 - [D.W. Brooks Lecture](#) | 3:30PM | Athens, GA

Nov 13 - [Getting the Best of Pests Webinar](#) | 8:00AM - 10:30AM

### SAVE THE DATE

Dec 9-11 - [Community Food Systems Conference](#) | Savannah, GA

Jan 9-12 - [Southeast Regional Fruit and Vegetable Conference](#) | Savannah, GA

Jan 22-25 - [Southern Sustainable Agriculture Working Group \(SAWG\) Conference](#) | Little Rock, AR

Feb 7-8 - [Georgia Organics Conference and Expo](#) | Athens, GA

For more events, please visit the  
UGA Extension Calendar

## UGA Extension IPM Program Information

The UGA Integrated Pest Management Newsletter is a monthly journal for researchers, Extension agents, Extension specialists and others interested in pest management. It provides the most updated information on legislation, regulations, and other issues concerning pest management in Georgia.

Do not regard the information in this newsletter as pest management recommendations. Consult the Georgia Pest Management Handbook, Extension publications or appropriate specialists for additional information.

Have questions about the newsletter, website or basic information? Contact us at [ipm@uga.edu](mailto:ipm@uga.edu)!

We value your feedback! Please complete our [survey](#).

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