SCAFFOLDS Fruit Journal, Geneva, NY
Volume 29, No. 22
Update on Pest Management and Crop Development
August 17, 2020

COMING EVENTS

<table>
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<td>Current DD* accumulations</td>
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Upcoming Pest Events (Geneva) – Ranges (Normal +/- 1 Standard Deviation):

Apple maggot flight subsides... 2772-3258 1907-2283
Codling moth
  2nd flight subsides .............. 2846-3462 1923-2447
Lesser appleworm
  2nd flight subsides .............. 2794-3488 1918-2422
Obliquebanded leafroller
  2nd flight peak .................. 2588-3007 1750-2092
Oriental fruit moth
  3rd flight peak .................. 2650-3200 2488-2762 1822-2216
Peachtree borer
  flight subsides .................. 2478-3126 1672-2180
Redbanded leafroller
3rd flight start .................... 2513-2936  1710-2037
Redbanded leafroller
  3rd flight peak .................... 2704-3174  1867-2201
San Jose scale
  2nd flight subsides ............... 2673-3419  1813-2429
Spotted tentiform leafminer
  3rd flight peak .................... 2545-2982  1731-2078
White apple leafhopper
  2nd brood 1st catch ............... 2770-3098  1948-2252
*[all DDs Baskerville-Emin, B.E.]

TRAP CATCHES (Number/trap)
Geneva

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[Section: INSECTS]

INVASIVES CORNER
(Art Agnello, Entomology, Geneva; ama4@cornell.edu)
[Box text: OUT OF THE EAST]
This used to be the point in the season when most insect and mite concerns were being put to bed as the fruit industry prepared for the busy harvest period that's already under way. However, the pest landscape is measurably different now to what used to pass for a normal crop protection program, thanks mainly to an apparently endless parade of invasive pest species that have been increasingly making their way to our region from other parts of the world – mostly Asia – as a side effect of expanded trade and international commerce, which provides convenient routes of access to hitchhiking pests (plants and insects), making it possible for everyone to share the wealth of their destructive flora and fauna with everyone else. Here we report on three such invasive pest species, all of which happen to be at their most threatening levels during the last month or two of the growing season.

BROWN MARMORATED STINK BUG Moving Into Hudson Valley Orchards Under Summer Drought Conditions.
(Peter Jentsch, Entomology, HVRL, Highland; pjj5@cornell.edu)
Seasonal drought conditions have created conditions conducive to stink bug movement into fields and orchards over the past few weeks. Late-instar nymphs of the green stink bug (GSB) and brown marmorated stink bug (BMSB) *Halyomorpha halys* (Stål), have been on the increase in Wayne County, Highland, and New Paltz in Ulster County, Fishkill in Dutchess and Campbell Hall in Orange County traps over the past few weeks. We expect to begin seeing newly emerging adults followed by newly hatching nymphs in late August. Presently, nymphs are being found in the interior of many orchards, which is a sign that fruit injury will be present at packout in these orchard blocks. Movement of these nymphs to apple foliage and fruit is beginning with dimpling and corking appearing roughly 10 days to two weeks after feeding begins.

**Biology**

Stink bugs are hemipteran insects that feed using a "beak" or proboscis, inserted into the host plant to extract fluids. The brown marmorated stink bug is an insect in the family Pentatomidae, native to Asia, invasive to the US since the early 1990s. The nymphs and adults of the brown marmorated stink bug feed on over 100 species of plants, agricultural crops, and have
become an urban pest, overwintering in man-made structures, including homes. The pest has 5 nymphal instars and in some years, there are two generations in NYS.

The brown marmorated and native green stink bug are arboreal insects, residing in woodland habitat. However, when populations continue to rise through July into August, increasing numbers of adults and nymphs can be observed on tree fruit. This has occurred over the past three weeks. Increasing presence of the insects in trees will result in injury in peach, pear, and apple rows bordering woodlands and hedgerows. Nymphs ranging from 2nd to 5th instar of both species have been observed feeding on fruit along the orchard perimeter since last week.

This newly developing partial second generation will significantly increase BMSB population in woodlands. As host quality from the arboreal woodland habitat declines, increasing migration to tree fruit is very likely through the end of August on through to the end of October. Increased scouting should be based on recent and upcoming Tedders (pyramid) and clear panel trap captures. This will be especially important if the weather turns dry, with irrigated tree fruit becoming a
favored host of BMSB as adults begin to feed more intensively in preparation for their overwintering phase.

**Monitoring**

Remember that trap captures combined with scouting for the various life stages of the insect along the orchard perimeter rows should be the basis for insecticide applications. Unlike most other pests, we should not be using IPM thresholds based on stink bug feeding that results in fruit damage. As the expression of the injury occurs 7–10 days or longer after feeding, you would have missed your opportunity to reduce injury if you postpone preventive applications while waiting on injury that has already occurred to become visible.

The use of trap captures is an invaluable tool to assist in BMSB management decision making. The Tedders or pyramid trap or a 4-ft stake with stapled sticky panel, both of which utilize the dual aggregation pheromone lure, will provide an indication of absence / presence. A threshold of 10 adults per trap has been used as a first step in decision making for insecticide use. Combining trap threshold and orchard monitoring should be employed through harvest beginning this
Finding a single BMSB or green stink bug in the tree canopy within 100 ft of a scouted perimeter row would be considered a conservative threshold in combination with trap thresholds. That said, driving along the orchard will likely spook the insects. You'll need to stealth your way quietly around the orchard, preferably during the early evening or morning. Green stink bugs tend to remain low, while BMSB will tend to move to the tops of the trees to feed.

**Look-alikes**

Identifying key stink bug species is critical to making sound judgement for management decisions. There are two brown colored species that can easily be mistaken for brown marmorated stink bug. One look-alike seen in the field during the latter part of the season, easily confused with BMSB, is called the **spined soldier bug, Podisus maculiventris (Say)**. We've seen this insect in the field last week, and it should be recognized as a beneficial species. The **brown stink bug, Euschistus servus (Say)**, another look-alike, is equally as confusing in its close resemblance to BMSB. Yet, given its pest status as a fruit feeding stink bug, its presence in the orchard would also warrant management, as they too feed on fruit.
Fruit Injury

Much confusion about injury can arise at harvest, given the four types of late season injury that can occur to fruit. These are:

* **Stink bug injury for three different species** (Green, Brown and Brown Marmorated stink bugs): A discolored depression. Always a "sting" site in the center of the depression. Upon slicing, corking up to the skin surface.

* **Hail injury** during the season: A discolored depression. Never a "sting" site in the center of the depression. Upon slicing, corking up to the skin surface.

* **Bitter pit** from calcium deficiency, requiring calcium applications throughout the season: A discolored depression. Never a "sting" site in the center of the depression. Upon slicing, corking separated from the skin surface.

* **Apple maggot** from oviposition or egg laying site, or a "sting" in fruit surface: Sometimes a depression. Most often only slight discoloration. Always a "sting" site in the center of the depression. Upon slicing, no corking, BUT soft, oxidized fruit flesh, often with tunneling well into the fruit. Sting larger than Stink Bug feeding site, and always easy to see. Cutting directly beneath the
sting will give rise to juice seeping up from the egg laying sting.

Management

Trap numbers of stink bugs, in combination with scouting, should precede management decisions during this time of BMSB population build-up. Review your options carefully with regards to harvest dates, PHIs, re-application intervals, and seasonal a.i. amount maximums. When selecting insecticides for border row, alternate-row, and whole-orchard applications, you should consider constraints imposed by your markets. If drought continues, then a longer residue based on the active ingredient minimum residue level (MRL) could become an issue, especially in EU markets and Israel.

When thresholds are exceeded or stink bugs become visible along the orchard edge, applications should begin. Whole-orchard applications should be made if nymphs are found within the orchard. As movement of native and BMSB populations begin to migrate into orchards, alternate-row followed by border-row applications can be considered as effective strategies. As stink bugs are orchard edge opportunists, the majority of the injury to fruit will occur along the 30–
90-ft perimeter edge, making border row applications along the orchard edge a viable control option.

Applications of insecticides selected for whole-orchard applications should also have strong efficacy for apple maggot, obliquebanded leafroller and 3rd generation codling moth if CM infestations from 1st or 2nd generation are active, which may also require management.

When BMSB populations dramatically increase during the late season, migration into orchards can be dramatic. BMSB have been known to funnel down to the last variety standing (such as the high value Pink Lady), in which case applications in late October may be warranted!!

One of the most effective tools for use in managing BMSB is the active ingredient bifenthrin, which is available in a number of formulations. Bifenthrin has a 12-hr re-entry interval, a 14-day pre-harvest interval, and a 30-day re-application interval. At the end of July, we received notice that the EPA has approved the Section 18 application for use of bifenthrin against the brown marmorated stink bug for 2020. Links below
provide access to PDF copies of the Section 18 labels for products containing the A.I. bifenthrin: 

**Bifenture 10DF Insecticide/Miticide (EPA Reg. No. 70506-227)**

**Bifenture®EC Agricultural Insecticide (EPA Reg.No.70506-57)**

**Brigade WSB (EPA REG. NO. 279-3108)**

Labels should be in the possession of the applicator during applications. This insecticide is approved for use in apple, peach and nectarines through October 15th as a "Section 18 EXEMPTION, FOR DISTRIBUTION AND USE ONLY IN Columbia, Dutchess, Orange, Ulster, Monroe, Orleans, Wayne and Niagara Counties this year. Use in any other counties is prohibited in New York State".

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**SPOTTED WING DROSOPHILA End of Season Update.**

(Julie Carroll, NYS IPM Program, Geneva; jec3@cornell.edu)

SWD is ramping up, and populations can be kept lower through sanitation – removing cull fruit. Otherwise, either of two insecticides for the listed crops could be applied to fruit on the ground. A listing of
SWD insecticides for treating dropped fruit can be found at:
http://www.hort.cornell.edu/fruit/pdfs/swd/drop-cull-insecticides.pdf

There is a new 2(ee) for Asana on apples, pears and stone fruit from Valent. This is the only material available to treat drops of these fruits and Valent now owns this product, so the EPA registration number has also changed.

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New York State Announces Confirmed Finding of SPOTTED LANTERNFLY on Staten Island

On August 14, the NYS Dept of Agriculture and Markets confirmed that Spotted Lanternfly (SLF), an invasive pest from Asia, has been found on Staten Island. Several live, adult insects were discovered by OPRHP (Office of Parks, Recreation and Historic Preservation) staff in Clay Pit Ponds State Park Preserve. SLF (Fig. ##) is a destructive pest that feeds on more than 70 plant species, including tree-of-heaven, and plants and crops that are critical to New York's agricultural economy, such as maple trees, apple trees, grapevine, and hops.
SLF feeding can stress plants, making them vulnerable to disease and attacks from other insects. SLF also excretes large amounts of sticky "honeydew," which attracts sooty molds that interfere with plant photosynthesis, negatively affecting the growth and fruit yield of plants, and impacting forest health. SLF also has the potential to significantly hinder quality of life and recreational activities due to the honeydew and the swarms of insects it attracts.

Following the finding, state and federal agencies immediately began extensive surveys throughout the area. Crews will continue to survey areas on Staten Island, develop management plans to slow SLF's spread, and minimize the damage and impact from this invasive species. NYS Ag & Markets urges New Yorkers to report potential sightings using the web reporting tool found here: https://survey123.arcgis.com/share/a08d60f6522043f5bd04229e00acdd63

Adult SLF are active from July to December. They are approximately one-inch long and half an inch wide at rest, with eye-catching wings. Adults begin laying eggs in September. Signs of an SLF infestation may include:

- Sap oozing or weeping from open wounds on tree trunks, which appear wet and give off fermented odors.
· One-inch-long egg masses that are brownish-gray, waxy and mud-like when new. Old egg masses are brown and scaly.
· Massive honeydew build-up under plants, sometimes with black sooty mold developing. For more information on Spotted Lanternfly, visit https://agriculture.ny.gov/spottedlanternfly.

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Editor: Art Agnello
Dept. of Entomology, Cornell AgriTech at NYSAES
15 Castle Creek Dr., Geneva, NY 14456-1371
Phone: 315-787-2341  FAX: 315-787-2326
E-mail: ama4@cornell.edu
Online at
<http://www.scaffolds.entomology.cornell.edu/index.html>