scaffolds

Update on Pest Management and Crop Development

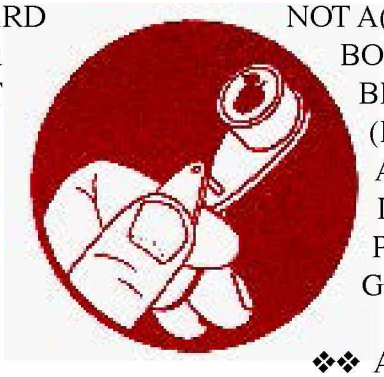
F R U I T J O U R N A L

July 14, 2014 VOLUME 23, No. 17 Geneva, NY

INSECTS

SHORT LIST

ORCHARD RADAR DIGEST



ROGUE'S GALLERY

NOT A(NOTHER) BORING BEETLE (Deb Breth, Art Agnello, & Liz Tee; Lake Ontario Fruit Program & Entomology, Albion & Geneva)

[H = Highland; G = Geneva]:

Roundheaded Appletree Borer
RAB peak hatch roughly: July 8 to July 25 (H)/ July 12 to July 29 (G).

Dogwood Borer
Peak DWB hatch roughly: July 26 (H)/July 31 (G).

Codling Moth
Codling moth development as of July 13: 2nd generation adult emergence at 6% (H)/1% (G) and 1st generation egg hatch at 100% (H)/98% (G).
2nd generation 7% CM egg hatch: July 23 (H)/ July 31 (G) = target date for first spray where multiple sprays needed to control 2nd generation CM.

Oriental Fruit Moth
2nd generation second treatment date, if needed: July 13 (H)/July 20 (G).

Spotted Tentiform Leafminer
Optimum second sample date for 2nd generation STLM sapfeeding mines: July 14 (H)/ July 20 (G).

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❖❖ Apple growers in western NY have been dealing with yet another "new" insect pest challenge in their orchards. The black stem borer, *Xylosandrus germanus* (Fig. 1) was introduced from eastern Asia and was first detected in NY in 1932. It has since been documented in most parts of the US. It is a general wood boring insect, a member of the group called Ambrosia beetles, and has a huge list of suitable hosts, including American beech, maple, dogwood, black walnut, oak, magnolia, and several other ornamental and forest species. It was also documented in apple and sweet cherry in 1982. We first detected black stem borer in 2013 in 6 sites in Orleans and Wayne Counties, and have identified at least 6 more sites in 2014.

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IN THIS ISSUE…

Fig. 1. Adult of the black stem borer ambrosia beetle, *Xylosandrus germanus*

The tiny, black beetles overwinter in galleries at the base of infested trees. The first beetles emerge from overwintering sites to infest new sites after 2–3 days having maximum temperatures above 68°F. This means they can first become active in early to late April. One study noted the first activity occurs within 4 days after first bloom on Norway maple, and full bloom on border Forsythia. The second generation is expected to start in late July or early August, based on literature from Ohio, but our traps continue to capture adult beetles in early July.

Only females fly, and these emerge in the spring to colonize new hosts. The adult female drills a hole ~1 mm in diameter (Fig. 2), and hollows out a channel into the heartwood of small trees. She then tunnels into the sapwood of small trees (2–50 cm diameter) and starts to culture a fungal food source, *Ambrosiella hartigii*, laying her eggs (tiny, ~1 mm, white, and football-shaped) in the chamber. She lines the chambers with the Ambrosia fungus for the larvae (also white, with 3 instars) to feed on before they pupate to develop into an adult. It is this fungus that the larvae will feed on in the brood chambers, and not the tree's tissues. Development from egg to adult takes about 30 days, and the ratio of females to males is about 10:1. The females can lay anywhere from 2–54 eggs, depending on the host, but they average about 18.

Fig. 2. Black stem borer adult and entry holes

Although the biology of this insect is not fully understood, we believe that this insect has 2 generations per year in NY. Late in the summer, the beetles migrate to a hole in the lower trunk to overwinter, where researchers have found as many as 100 in a chamber. The beetles go into diapause in the summer and will not be active again until the next spring.

What do growers need to know about black stem borer? So far, orchards where BSB has been detected are tall spindle or super spindle plantings, in areas of wet soil conditions, or alternatively, where no irrigation is available. Although these borers have a reputation of attacking stressed trees that give off

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Fig. 3. Sap oozing from BSB entry holes

ethanol volatiles, they also have been reported to attack "apparently healthy trees." In the spring, the trees look like they are weaker than uninfested trees, and with some flaky bark, but some look perfectly healthy. Some are oozing sap or fire blight ooze from the entry holes (Fig. 3). If the weather is calm and dry, growers might be lucky enough to see the "toothpick" frass pushed out of the holes (Fig. 4). Upon close inspection, they might find small pin pricks (1 mm diameter) and the tiny black beetle in the hole. Using loppers or a pruning saw, growers can cut 1/4 to 1/2 inch from the hole to see the galleries that extend perpendicularly to the trunk of the tree, and are hollowed out a bit vertically to accommodate the brood of eggs (Fig. 5); additional channels may be cut into the pith of the tree.


Fig. 4. Frass "toothpick" pushed out of gallery by BSB adult

The fungus the beetles carry with them can kill the trees as well. Although several chemical and biological controls have been tested, researchers have not yet identified anything that will stop these beetles without a large number of trunk sprays. But with very wet spring or fall weather and poor soil drainage, you could see more damage the following season. The fungus carried by the beetle does not seem to be dependent on any particular weather conditions.


Fig. 5. BSB galleries and brood chambers showing eggs and immatures

If growers identify black stem borer in their high-density orchards, the recommendation (in ornamental nursery situations) is to rogue the infested trees (taking the rootstock as well), and take them to a location where they can be burned immediately. Growers can start a trapping program using ethanol-baited traps (Fig. 6), checking them weekly. A second method we have been investigating as a "trap-crop" approach is a system used by USDA researchers, which employs 12-inch beech loglets (1 inch in diameter), soaked in 15% ethanol for 3 days, and deployed outside of the orchards as super-attractive targets, to time insecticides for when the beetles emerge from the galleries to find a new site.


Fig. 6. Ethanol-baited BSB trap made from a juice bottle

As we looked in orchards where this problem was extensive last year, many trees showed crisp, blistered bark. We marked the trees and expected them to collapse the next spring. To our surprise, many of the trees were still "healthy" and green, with no sign of collapse, so if we can find an effective control tactic to prevent continuous infestation

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of the trees in high-density plantings, tree removal may become unnecessary.

The ornamental nursery industry, where this is a serious pest, relies on pyrethroids on a 2-week schedule, which would certainly be a challenge in apples because of concerns over how it would impact mite control. The nursery industry has also tested neonicotinoids, anthranilic diamides (cyazypyr, acelepryn), and tolfenpyrad, and has not found them to be effective in controlling BSB. We have nothing registered specifically for control of this pest, although Warrior II and Grizzly (lambda-cyhalothrin) are labeled for "tree borer species", but we have no experience or efficacy data to make specific recommendations at this time. It is also expected that chlorpyrifos trunk sprays for borers would be effective, but will not prevent infestations at higher points of entry, which have been found as high as 4 feet up in the tree.

Our group (with Kerik Cox, to assess potential pathogens associated with the infestations) is working on this pest to better understand the biology and identify viable controls. We are also trying to document economic damage for this pest so that this issue can get more attention for research. For more information on trapping for this pest or identifying the problem, please notify Debbie Breth (dib1@cornell.edu), or Art Agnello (ama4@cornell.edu).

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PEST FOCUS

Highland: **Obliquebanded leafroller** 1st flight has ended. **Oriental fruit moth** 2nd flight is at its peak. **Codling moth** 2nd flight is beginning.

FRUIT TOUR

EVENT ANNOUNCEMENTS

GENERAL INFO

CCE-LOF SUMMER TOUR - JULY 24

❖❖ The 2014 Lake Ontario CCE Summer Fruit Tour will take place on July 24, and will feature New Technology in the Orleans/ Niagara Co. Fruit Industry. The stops and topics include:

- Kast Farms, Lattin Rd., Albion - Gala, NY1, & NY2 plantings, economics, and management, including de-fruiting techniques; weed control in young trees; managing fire blight in young trees (Deb Breth, Alison DeMarree, Kerik Cox, Terence Robinson, Mario Miranda Sazo).

- Pettit Farms, Bates Rd., Medina - Black stem borer invasions; low vigor in NY1 & Honeycrisp (Deb Breth, Hannah Rae Warren, Art Agnello, Terence Robinson).

- Ledge Rock Farms, Gravel Rd., Medina - NY1 & NY2 tall spindle plantings; precision chemical thinning (Terence Robinson, Mario Miranda Sazo).

- Vizcarra Vineyards At Becker Farms, Quaker Rd., Gasport - history of farm & market, winery and brewery (Oscar & Mindy Vizcarra).

- New Royal Orchards, Rt. 31, Gasport - new SDHI fungicides for scab and mildew; phytotoxicity demo with tank mixes; protecting sweet cherries from rain with Voen and other canopies (Kerik Cox, Deb Breth, Mario Miranda Sazo, Terence Robinson, and Greg Lang - Michigan State).

There is no charge to attend, thanks to Sponsor and Donor support, but please pre-register by July 18 (585-798-4265 x26; or krh5@cornell.edu; or on LOF website: http://lof.cce.cornell.edu/

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WAYNE COUNTY FRUITGROWER TOUR
Wednesday, August 6, from 9:00 am
Registration and 1st stop at Wafler Nursery & Orchards, 10748 Slaght Rd, Wolcott, NY

Sponsored by agr.assistance, this large, informative and entertaining tour is in its 16th year, and will feature presentations on new club varieties, advances in automated fruit harvest systems, fire blight and apple scab management, PGR use, dealing with biennial bearing, orchard weed control, and internal worm management options, plus much more. Door prizes, lunch, some levity, a BBQ/clambake dinner with a live band, growers and industry representatives from NY and surrounding states — tough to beat on a midsummer day. Free attendance. Contact Lindsay LaMora (585-734-8904; lindsaylamora@agrassistance.com) for RSVP pre-registration and tour information.

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INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	7/7	7/10	7/14
Redbanded leafroller	1.9	3.7	1.4
Spotted tentiform leafminer	20.0	45.7	52.3
Oriental fruit moth	1.1	2.2	1.4
Codling moth	0.6	0.0	0.0
Lesser appleworm	0.4	0.0	0.5
San Jose scale	0.0	0.0	1.5
American plum borer	0.1	0.0	0.0
Lesser peachtree borer	0.5	0.5	0.3
Pandemis leafroller	0.6	0.0	0.1
Obliquebanded leafroller	2.8	0.3	0.1
Dogwood borer	15.0	20.2	2.3
Peachtree borer	1.6	0.2	0.6
Apple maggot	0.3	–	0.6

* first catch

Highland, NY

	7/7	714
Redbanded leafroller	3.8	2.3
Spotted tentiform leafminer	62.9	48.9
Oriental fruit moth	4.1	2.8
Codling moth	0.4	1.1
Lesser appleworm	0.5	0.2
Variegated leafroller	0.3	0.3
Tufted apple budmoth	3.1	0.8
Sparganothis fruitworm	0.0	0.1
Obliquebanded leafroller	2.9	0.4
Apple maggot	0.04	0.1

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–14/714):	1755	1172
(Geneva 1/1–7/14/2013):	1787	1206
(Geneva "Normal"):	1814	1130
(Geneva 1/1–7/21/14, predicted):	1937	1305
(Highland 1/1–7/14/2014):	2015	1353

Coming Events:	Ranges (Normal ±StDev):	
Spotted tentiform leafminer 2nd flight peak	1384–1800	866–1200
STLM 2nd gen. tissue feeders present	1378–2035	913–1182
Codling moth 1st flight subsides	1249–1839	789–1213
Codling moth 2nd flight begins	1548–2242	1009–1505
Dogwood borer peak catch	1470–1908	916–1264
Oriental fruit moth 2nd flight peak	1470–1980	937–1331
San Jose scale 2nd flight begins	1628–1986	1056–1342
Obliquebanded leafroller 1st flight subsides	1603–2039	1039–1373
Lesser appleworm 2nd flight begins	1418–2002	918–1326
Redbanded leafroller 2nd flight peak	1554–2002	996–1344
American plum borer 2nd flight begins	1548–2090	1021–1395
Apple maggot 1st oviposition punctures	1605–2157	1226–1575

NOTE: Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide.

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