SCAFFOLDS Fruit Journal, Geneva, NY
Volume 25, No. 3
Update on Pest Management and Crop Development
April 4, 2016

COMING EVENTS

	43°F	50°F
Current DD* accumulations		
(Geneva 1/1-4/4):	146.7	58.7
(Geneva 1/1-4/4/2015):	21.1	9.2
(Geneva "Normal"):	82.8	32.5
(Geneva 1/1-4/11, predicted):	157.8	62.4
(Highland 1/1-4/4):	285.5	128.4

Upcoming Pest Events – Ranges (Normal +/- Std Dev):

Apple grain aphid		
nymphs present	128-488	63-247
Green apple aphid present	111-265	38-134
Green fruitworm peak flight	97-209	37-97
Pear thrips in pear buds	118-214	50-98
Redbanded leafroller 1st catch	113-177	41-83
Rosy apple aphid		
nymphs present	134-244	56-116
Spotted tentiform leafminer		
1st catch	115-215	44-102
McIntosh half-inch green	148-198	63-93

*[all DDs Baskerville-Emin, B.E.]

Phenologies

Geneva:	Current	4/11, Predicted
Apple (McIntosh):	green tip	green tip - 1/2" green
(Empire/R. Delicious):	silver tip	green tip
Pear (Bartlett/Bosc):	swollen bud	swollen bud-bud burst
Sweet/Tart Cherry:	swollen bud	swollen bud-bud burst
Peach:	swollen bud	swollen bud-bud burst
Plum:	swollen bud	swollen bud-bud burst

Highland:

Apple (McIntosh): 1/2" green
(Red Delicious, Ginger Gold, Empire): 1/2" green
Pear (Bartlett, Bosc): bud burst

TRAP CATCHES (Number/trap/day)

Geneva

	3/25	3/28	3/31	4/4
Green Fruitworm	1.0*	8.5	9.5	-
Redbanded Leafroller	0.0	0.0	0.0	-

Highland (Peter Jentsch)

	3/14	3/21	3/28	4/4
Green Fruitworm	0.0	0.4*	1.0	0.0
Redbanded Leafroller	0.1*	<0.1	3.7	0.6

Spotted Tentiform Leafminer	-	-	-	5.1*

* 1st catch

[Section: INSECTS]

GALLERY OPENINGS

(Art Agnello, Entomology, Geneva; ama4@cornell.edu)

[Box text: TRUNK CALL]

Dogwood Borer

There has been increasing concern throughout the Northeast about damage being caused to apple trees by borers. The species of primary concern is dogwood borer, but American plum borer can be prevalent in western New York apple orchards that are close to tart cherry and peach orchards. From our observations, DWB is very prevalent throughout many of the Eastern as well as Western NY orchards with young plantings. While we do not have a complete picture of the effects of these borers on dwarf trees, we do know that they reduce vigor and can, in time, completely girdle and kill trees.

We have tested a number of insecticides against these borers over a number of growing seasons. Lorsban is very effective for this use and we have urged growers to take advantage of it where needed. In the past, we have compared some other materials, including white latex paint

and a series of alternative insecticides against Lorsban, with varying results. To make a long story short, only Avaunt, Danitol and, possibly Esteem, applied two or three times in midsummer, provided control comparable to one application of Lorsban. [NOTE: I mention this only for informational purposes; none of these other products are recommended OR labeled for use against DWB].

Our tests have shown that borers can be controlled season-long by applying Lorsban at various times in the spring and summer. While a postbloom trunk application of Lorsban is still allowed, enabling growers to spray at the peak of the dogwood borer flight, applying this material prebloom as early as half-inch green works well, too, and may be more convenient. Fall also may be a good time to control dogwood borer. Results from 2002 indicated that Lorsban applied postharvest the previous year (sprays went on in October 2001) controlled both the overwintering and the summer generations of dogwood borer. An October 2002 application of Lorsban similarly provided season-long control of dogwood borer in 2003. Lorsban works when applied in the spring or fall because it infiltrates burrknot tissue and kills larvae concealed within. It is also very persistent in wood so it continues to work for a considerable time after it is applied (apparently 9-12 months in our trials). Fall application could offer growers a

more convenient alternative for applying borer control sprays. Recall that Lorsban label restrictions allow only ONE application of any chlorpyrifos product in apples, whether as a foliar or trunk spray, so these recommendations pertain only if no earlier applications have been made during the season. Bear in mind that we now additionally have a mating disruption option available, Isomate-DWB, which we have found to be very effective in interfering with these insects' pheromone communication process. Use of this product would be recommended as a tactic at mid-May to early June, before the first adult catch of the season.

In a survey we conducted in the mid-1990s, we observed some relationships between borer infestation and various orchard parameters such as the proportion of trees with burrknots, proximity to stone fruit orchards and presence of mouseguards. Conventional wisdom has held that borer problems are worse where mouseguards are in place. Mouseguards can contribute to increased expression of the burrknots that borers invade, and may shield borers from predators and insecticide sprays. This has led some growers to contemplate removing mouseguards under the premise that mice are easier to control than the borers. However, results of our survey indicate that dogwood borer larvae may be found as readily in trees without

mouseguards as in those with them. (American plum borer may be a different story in orchards near tart cherry or peach trees.) A number of orchards in which we have conducted borer control trials have never had mouseguards and there is no shortage of dogwood borers in them. If mouseguards are deteriorated and no longer protect the tree, there may be some small advantage, in terms of borers, to removing them. But, in orchards where mouseguards still provide protection against rodents, removing them for the sake of borer control is probably not worth the risk. Instead, we would recommend the use of trunk sprays to control borers. Even with mouseguards on, insecticides will give adequate control if they are applied carefully (i.e., a coarse, low-pressure, soaking spray with a handgun).

Black Stem Borer

The recent emergence of black stem borer (BSB, *Xylosandrus germanus*) as a cryptic but devastating pest of apple trees in our region has focused more attention on early spring insect activity that could have serious consequences for tree health as the season progresses.

In 2015, we assessed BSB adult occurrence and distribution in several New York apple growing regions, using ethanol-baited bottle traps hung on metal garden

hangers at a 1-m height, placed along the edges of orchards bordered by hedgerows and woods likely to be a source of immigrating beetles. Additional traps were located (in the western NY orchards) adjacent to previously attacked trees, to verify their attractiveness. Traps were checked weekly starting at the end of April, before maximum temperatures of 68°F began to occur, and continuing until the first week of September. Traps were placed on 14 farms in Wayne Co., 19 farms in Orleans and Niagara Counties, 11 farms in the Hudson Valley, and 9 farms in the Champlain Valley. BSB adults were captured at nearly all of the sites, and were most numerous in the western NY locations. First activity was noted in WNY on May 5, and there were higher counts along the orchard edges than in the interiors. June 2 was the peak of beetle emergence from the overwintering sites, and 1st generation adults emerged from July 6-27. On August 5, the 2nd generation adults emerged, with catch continuing into September.

The efficacy and practicality of trunk sprays using chlorpyrifos and two pyrethroid products (lambda-cyhalothrin and gamma-cyhalothrin) was evaluated against infestations of ambrosia beetles on two commercial farms having documented infestations (Sodus and Medina). All treatments were replicated in randomized complete plots at each of the individual test sites. Potted 2-yr old Mutsu

trees from the nursery were placed in turn into larger pots, which were then flooded to induce stress and promote ethanol production. These potted trees were placed in the rows between the orchard trees, and the trunks of the potted trees plus the orchard trees were sprayed using a handgun sprayer on May 7-88, before the start of major BSB flight. The treatments were:

- chlorpyrifos (Lorsban Advanced); 1.5 qt/100 gal
- lambda-cyhalothrin (Warrior II); 2.56 fl oz/100 gal
- gamma-cyhalothrin (Declare); 2.05 fl oz/100 gal
- Untreated Check (potted trees only; orchard trees in Check plots sprayed with chlorpyrifos)

Treatment efficacy was assessed for evidence of new infestations in the potted trees on August 19; these were destructively sampled to document all occurrences of holes, galleries, adults, and brood in the treated trees.

Results varied somewhat between sites (Table 1). At Sodus, there was a slight trend toward lower infestations (infestation holes, presence of galleries, gallery contents) in the sprayed vs. Check treatments; however, there was no real separation among the handgun treatments. At the Medina site, the Lorsban handgun treatment generally had the lowest infestations, with the pyrethroid products not performing as well.

Table 1. Ambrosia beetle insecticide control trials, 2015

Treatment	Avg # holes/ tree	Avg. # infestation sites w/ presence of live gallery	live adults	brood	dead adults
Sodus					
Check	2.25 a	1.30 a	0.45 a	0.25 a	0.05 a
Warrior	1.00 ab	0.80 ab	0.05 bc	0.05 a	0.10 a
Declare	0.95 ab	0.85 ab	0.40 ab	0.30 a	0.05 a
Lorsban	1.30 ab	0.85 ab	0.25 abc	0.20 a	0.05 a
Medina					
Check	1.65 ab	1.00 ab	0.10 a	0.25 a	0.0 a
Warrior	2.25 a	1.45 a	0.10 a	0.25 a	0.15 b
Declare	1.00 bc	0.45 bc	0.0 a	0.05 ab	0.0 a
Lorsban	0.35 c	0.15 c	0.0 a	0.05 ab	0.0 a

For each site, values in the same column followed by the same letter are not significantly different ($P < 0.05$, Student's t-test).

These trials will be repeated this year to get a clearer indication of the most effective measures to take, and although recommendations for controlling this pest are still being formulated, it appears that tree health – avoiding stress to the trees – is an important factor in BSB

management. Our current advice is for growers to remove and destroy any infested trees detected in a planting, to prevent new infestations in surrounding trees. Trapping and monitoring adults using ethanol lures is a useful and informative tactic, but the fact remains that ambrosia beetles are difficult to control with insecticides. Sprays must be closely timed with beetle attacks, and multiple applications may be necessary. Using a material with long residual activity is a plus, and the best timing is likely against emerging overwintered brood, according to the literature.

Although we do not have sufficient experience in dealing with this insect to make reliable control recommendations, we would note that growers considering the use of Lorsban trunk sprays against San Jose scale and/or dogwood borer at this time may also see some benefit against ambrosia beetles, particularly in trees that might be under stress from flooding or cold injury.

[Section: DISEASES]

ENTER YOUR "GREEN TIP" DATE

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

[Box text: GO STOP GO]

The NEWA tools for apple IPM and crop production are designed so that anyone can enter the relevant crop growth stage or insect trap date to run the model in real time (or historically, to see what happened last year). Of special interest among tree fruit growers now is the apple scab forecast tool. This needs a green tip date, specifically 50% green tip on McIntosh, to start the ascospore maturity model. Several end-users have weighed in on the "estimated" green tip date that shows up. "Never been right, as far as I've seen." "It's way off this year; things are about two weeks early." "Why do I have to enter it every time?" Agreed, the green tip date is only a rough estimate, and, it doesn't go into a cache. It's important for you to enter your orchard's green tip date, preferably from a McIntosh orchard, when using the NEWA apple scab tool. Click in the white box next to "Green Tip Date:" and select the date from the calendar that pops up. This will improve the accuracy of the ascospore maturity model, which begins at green tip.

What about the infection events? The Infection Events Summary table provides a perspective on the risk of infection over the previous two days, the current day and the 5 days into the future, based on the

National Weather Service forecast. Comparing this to the level of ascospore maturity in the Ascospore Maturity Summary table helps delineate the risk level. Below the Infection Events Summary is the log of the Apple Scab Infection Events starting on March 1 and logging events through October 30 each year. Some things to keep in mind when managing apple scab—environment, host, pathogen:

- The NEWA apple scab tool models the impact of the environment on pathogen development.
- Apples vary in their susceptibility to infection, with the "sweet spot" for *Venturia inaequalis* infection being from tight cluster through petal fall. So watch out for infection events occurring during these growth stages when the plant tissue is highly susceptible!
- Apple varieties vary in their susceptibility to apple scab. For instance, McIntosh is most susceptible, whereas Honeycrisp is less susceptible to infection. A lower labeled rate of a fungicide might be possible on less susceptible cultivars.
- Overwintering inoculum in leaf litter. Practicing sanitation with leaf mulching in fall or spring using a flail mower or urea sprays (40 lb/A) directed at leaf litter can reduce the overwintering inoculum by about 55%.

So remember to keep track of your biofix dates and enter them whenever you use the NEWA tools. Jot them down on a card that'll fit with your smart phone or, better yet, write them in the Notes app on your phone, so you can check the NEWA apps and enter your biofix dates wherever you might be.

This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

Scaffolds is published weekly from March to September by Cornell University -- NYS Agricultural Experiment Station (Geneva), and Ithaca -- with the assistance of Cornell Cooperative Extension. New York field reports welcomed. Send submissions by 2 p.m. Monday to:

Scaffolds Fruit Journal
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