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Update on Pest Management and Crop Development

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

June 15, 2015 VOLUME 24, No. 12 Geneva,

INSECTS

THE STORM

ORCHARD RADAR DIGEST

[H = Highland; G = Geneva]:

Roundheaded Appletree Borer

RAB Peak egglaying period roughly: June 18 to July 3 (H)/June 22 to July 8 (G).

First RAB eggs hatch roughly: June 14 (H)/June 16 (G). Peak hatch roughly: July 3 to July 23 (H)/July 7 to July 28 (G).

Dogwood Borer

First DWB egg hatch roughly: June 19 (H)/June 22 (G). Peak hatch roughly: July 23 (H)/July 28 (G).

Codling Moth

Codling moth development as of June 15:

1st generation adult emergence at 52% (H)/40% (G) and 1st generation egg hatch at 3% (H)/ 0% (G).

1st generation 3% egg hatch expected: June 14 (H)/June 18 (G).

Lesser Appleworm

2nd LAW flight begins around: July 4 (H)/July 9 (G).

Obliquebanded Leafroller

Where waiting to sample late instar OBLR larvae is not an option (= where OBLR is known to be a problem, and will be managed with insecticide against young larvae), early egg hatch and optimum date for initial application: June 17 (H)/ June 21 (G).

Where waiting to sample late instar OBLR larvae to determine need for treatment, ptimum sample date for late instar summer generation OBLR larvae: June 26 (H)/June 30 (G).

Oriental Fruit Moth

2nd generation OFM flight begins around: June 22 (H)/June 26 (G).

2nd generation, first treatment date, if needed: June 30 (H)/July 4 (G).

San Jose Scale

1st generation SJS crawlers appear: June 12 (H)/June 15 (G).

Spotted Tentiform Leafminer

Rough guess of when 2nd generation sap-feeding mines begin showing: June 28 (H)/July 3 (G). Optimum first sample date for 2nd generation STLM sapfeeding mines is July 5 (H)/July 10 (G).

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IN THIS ISSUE…

IN THE WIND

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

❖❖ Potato leafhopper (PLH) does not overwinter in the northeast but instead migrates on thermals (warm air masses) from the south. It is generally a more serious problem in the Hudson Valley than in western N.Y. or the Champlain Valley; however, weather fronts such as those resulting from the recent storms occurring in the middle states as well as in our region provide ample opportunity for most of the region to share the wealth, so it doesn't hurt to tour observantly through a few orchards now. Because PLH comes in constantly during the season, there are no distinct broods or generations and the pest may be present continuously in orchards from June through harvest.

PLH feeds on tender young terminal leaves. Initially, injured leaves turn yellow around the edges, then become chlorotic and deformed (cupping upward) and later turn brown or scorched. Damage is caused by a toxin injected by PLH while feeding. PLH also occasionally causes symptoms similar to the effects of growth regulators, such as excessive branching preceding or beyond the point of extensive feeding. PLH damage is often mistaken for injury caused by herbicides, nutrient deficiency, or over-fertilization. PLH injury may not be serious on mature trees but can severely stunt the growth of young trees.

Nymphs and adults should be assessed on 50–100 randomly selected terminal leaves in an orchard. Older trees should be inspected approximately every three weeks during the summer. Young trees should be sampled weekly through July. PLH nymphs are often described as moving sideways like crabs, whereas WALH generally move forward and back. No formal studies have been conducted in N.Y. to determine the economic injury level for PLH on apples, so we suggest a tentative threshold of an average of one PLH (nymph or adult) per leaf. Little is known about the natural enemies of PLH, but it is assumed that they cannot effectively prevent damage by this pest in commercial New York orchards.

Damage by this migratory pest is usually worse when it shows up early. PLH can cause significant damage to newly planted trees that are not yet established. When PLH, white apple leafhopper (WALH), rose leafhopper (RLH) and aphids are present, control measures are often warranted.

Field trials conducted some years ago in the Hudson Valley evaluated reduced rates of Provado against all three species of leafhoppers. Provado was applied in combinations at a full rate (2 oz/100 gal) and a quarter rate (0.5 oz/100 gal), at varying intervals (3rd–5th cover). Nymphs of PLH, WALH, and RLH were sampled and leaf damage by PLH was monitored.

Because of Provado's translaminar activity, all rates and schedules produced excellent control of WALH/RLH nymphs (however, reduced rates will

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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 pm Monday to:

scaffolds FRUIT JOURNAL
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This newsletter available online at:
http://www.scaffolds.entomology.cornell.edu

not control leafminer). Against PLH nymphs, the number of applications was shown to be more important than rate; i.e., better protection of new foliage. Considering the percentage of leaves with PLH damage, the number of applications again appeared to be more important than application rate.

Admire Pro, the currently available imidacloprid formulation from Bayer, is also an excellent aphicide, and the same principle would hold as for PLH — maintaining coverage of new growth is more important than the rate. Moreover, reduced rates are likely to increase the survival of cecidomyiid and syrphid predators that are common and effective biological control agents. Other management options for this complex of leaf feeding bugs can be found in the "Additional Summer Sprays" section starting on p. 145 in the Recommends. Check Table 7.1.2 (p. 65) for impacts of any of these products on beneficials. ❖❖

ACARI SIDE

MIXED MOTILES

(Art Agnello, Entomology, Geneva)

❖❖ Despite the regular drenching we've been receiving during the past couple of weeks, there is still sufficient heat (and food) to promote buildups of European red mite populations in various sites. Now that we are entering another mite control season, it may be useful to quickly go over some basics for maximizing the effectiveness of the tools we have for keeping them under control. Mite management can be considered to be a 2-phase process: 1) An early season program, against the overwintering generation; and 2) A summer program, directed against new populations.

Usually, a preventive approach (i.e., without the need to sample) is advised for the early season, depending on the previous year's pressure. Among the options available for this task are (were): delayed dormant oil, an ovicide-larvacide (Apollo/Savey/Onager/Zeal) applied prebloom or (adding Agri-Mek to the list) after petal fall. For summer populations, scouting and sampling is advised to pick up rapid mite increases on new foliage, especially during early summer, when trees are most susceptible. During this phase, thresholds increase as the summer goes on and the trees become more tolerant of mite feeding. When the numbers of motiles (everything but eggs) reach or approach threshold, a "rescue" material can be recommended, among them are: Acramite, Apollo, Kanemite, Nexter, Onager, Portal, Savey, Vendex, and Zeal.

Because mites have many generations per year, they have a high potential to develop resistance. Some major differences between resistance management programs for fungicides vs. insecticides and miticides are:

1 - Insect and mite resistance is not promoted by using low dosages of materials; i.e., it doesn't cause a population shift in their susceptibility, as can occur with pathogens.

2 - Frequent applications of high rates usually will not prevent or slow down the development of insect and mite resistance.

3 - Usually, high dosages are not toxic to resistant insects or mites, but they do kill a greater number of susceptible individuals.

Recall that resistant mites are theoretically "less fit" or weaker than susceptible individuals. They have shorter lives, are physically smaller or weaker, produce fewer offspring, take longer to develop, and their mating success is lower. In the absence of competition from susceptible individuals, resistant pests rapidly multiply.

The key to management of resistance to insecticides and miticides is to reduce selection pressure that favors the survival of resistant individuals. Some tactics for doing this are:

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• Treat different generations with materials of different chemical classes.

• Use nonchemical control tactics where possible (e.g., biological control by using selective insecticides -- i.e., avoiding pyrethroids and carbamates -- to encourage predators).

• Use good miticide stewardship, apply only when necessary, use correct dosages, obtain adequate coverage, and optimize your timing.

Not so long ago, our miticide choices were not very numerous: oil, Morestan (prebloom), Vydate, Omite, Carzol, and Kelthane. We have many more options today, but it's important to keep in mind how they may (OR may not) differ:

[12B] Vendex: disrupts ATP formation
[6] Agri-Mek/Proclaim: GABA (neurotransmitter) site; affects chlorine ion
channel, inhibits nerve transmissions
[25] Acramite: GABA (neurotransmitter) site (probably); contact activity
[10A] Apollo/Savey/Onager: growth inhibitors
[10B] Zeal: growth inhibitor
[20B] Kanemite: METI (mitochondrial electron transport inhibitor), Site II
[21] Nexter/Portal: METI (mitochondrial electron transport inhibitor), Site I
[23] Envidor: lipid biosynthesis inhibitor

These numbers, which are listed just before the product names in the Tree Fruit Guidelines spray tables, are assigned by IRAC (Insecticide Resistance Action Committee). This is an international organization of researchers and scientists committed to prolonging the effectiveness of pesticides at risk for resistance development. The number codes represent Mode of Action Classification Groups. An arthropod population is more likely to exhibit cross-resistance to materials within the same group, so if you're seeing (or anticipating) reduced efficacy from a miticide that may have been effective in the past, it would be advisable to switch to a material that's in a different IRAC grouping.
For more information on this effort, see: http://www.irac-online.org/ ❖❖

PEST FOCUS

Geneva: **Spotted tentiform leafminer** 2nd flight began today, 6/15.

Highland: **Leafhopper (RLH, PLH/WALH)** damage to apple foliage observed. **Codling moth** injury to Red Delicious fruit observed.

Insect model predictions for Highland/Geneva:
Obliquebanded leafroller larval emergence @350 DD43 (currently @ 383[H]/277[G])

DISEASES

FOREIGN LESION?

WHERE IS STREP-RESISTANT FIRE BLIGHT IN NEW YORK?

(Kerik Cox, Plant Pathology, Geneva; kdc33@cornell.edu)

❖❖ Since the winter of 2011, streptomycin-resistant strains of the fire blight bacterium, Erwinia amylovora, have been identified from 16 apple farms in western NY. Because of this, Wayne, Ontario, Monroe, Orleans, and Niagara Counties are considered high risk for streptomycin resistance. In high-risk areas, streptomycin may provide less than adequate control of blossom infection. However, prohexadione-calcium (Apogee) will still be effective against shoot blight.

In 2014, no new instances of streptomycin-resistant E. amylovora were found in New York. Once again this year, we will be testing for resistance to the antibiotic streptomycin in New York. Conditions during bloom were conducive for the development of populations of E. amylovora on flower surfaces, and there was considerable shoot blight throughout the state, especially in areas historically free of shoot blight.

In new plantings, scout trees for fire blight symptoms at 7-day intervals until July 31st. Infected trees should be removed, as described above. Also scout plantings 7–10 days after hail or severe summer storms. The NEWA disease forecasting model for fire blight, http://newa.cornell.edu/index.php?page=apple-diseases, can assist by providing an estimate of symptom emergence following a storm or other trauma event; scroll to the bottom of the fire blight results page and enter trauma event dates where prompted. Also, scout new plantings at the end of the season (mid-September).

Fire blight strikes should be pruned out promptly and destroyed. It is best to prune well back into healthy wood, at least 12 inches behind the water soaking margin or into 2nd year wood. If you are seeing blossom blight strikes in blossom clusters and associated shoots when you are out assessing fruit set and the effectiveness of thinning sprays, contact one of the people below to help you collect samples and take data on the situation:
Debbie Breth - 585-747-6039, dib1@cornell.edu
Julie Carroll - 315-787-2430, jec3@cornell.edu
Kerik Cox – 315-787-2401, kdc33@cornell.edu

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Instructions for sampling

It is only possible to isolate the bacteria (Erwinia amylovora) from fresh, active lesions, where healthy tissue meets the diseased tissue – the lesion margin. It is impossible to isolate fire blight bacteria from dead, dried out tissue. If possible, refrigerate infected trees and strikes. Protect samples from drying out prior to submitting them. Do not collect entire branches or trees unless symptoms are unusual.

Collect samples that include about 3 inches of healthy tissue beyond the infected tissue, and include about 3 inches of infected tissue. Do not submit all the dead branch of the strike; this is often too long and can be cut back to 3 inches of infected tissue above 3 inches of healthy tissue.

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Where is strep-resistant fire blight in New York?

Submit fire blight infected trees and strikes for testing
Call one of the persons below to help you collect samples and take data on the situation:
Debbie Breth - 585-747-6039, dib1@cornell.edu
Julie Carroll - 315-787-2430, jec3@cornell.edu
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Sample information (samples without information will not be processed)
Date collected____
Collector's name____
Grower name & farm_______________________________________
Street address____
City________________________________ Zip Code__________
County____

Fire blight sprays applied in 2014
Date Material

____
____
____

GPS coordinates of the sample collected__________________________
Part of the tree infected is (circle) -
blossom cluster current shoot young wood trunk

Length of strike (ft. in.)________________
Variety______________________________
Rootstock____________________________
Age of tree__________________________
If a newly planted tree, from what nursery? ________________________

Instructions for sampling

It is only possible to isolate the bacteria (Erwinia amylovora) from fresh, active lesions, where healthy tissue meets the diseased tissue – the lesion margin.

It is impossible to isolate fire blight bacteria from dead, dried out tissue.

The Lesion Margin

Collect samples that include about 3 inches of healthy tissue beyond the infected tissue, and include about 3 inches of infected tissue. Do not submit all the dead branch of the strike, this is often too long and can be cut back, as described, to 3 inches of infected tissue above 3 inches of healthy tissue.

If possible, refrigerate infected trees and strikes.
Protect samples from drying out prior to submitting them.

Do not collect entire branches or trees unless symptoms are unusual.

Fire blight strike on current shoot (photo courtesy of J. Carroll).

Healthy growth. Trim this down, leaving about 3 inches of healthy tissue.

Lower lesion margin. Cut at least 3 inches into healthy tissue, below the lesion

The strike. Cut this back, leaving about 3 inches of infected tissue.

INSECT TRAP CATCHES
(Number/Trap/Day)

Geneva, NY

	6/8	6/11	6/15
Redbanded leafroller	0.0	0.0	0.0
Spotted tentiform leafminer	0.0	0.0	1.1*
Oriental fruit moth	0.0	0.5	0.1
Lesser appleworm	0.1	0.0	0.5
Codling moth	0.9	1.2	0.6
San Jose scale	0.0	0.0	0.0
American plum borer	0.0	0.0	0.0
Lesser peachtree borer	0.1	0.2	1.6
Peachtree borer	0.2*	0.0	0.0
Dogwood borer	1.0	0.8	3.1
Pandemis leafroller	4.1	6.3	5.3
Obliquebanded leafroller	2.6	3.3	1.6

* first catch

Highland, NY

	6/8	6/15
Redbanded leafroller	0.0	0.0
Lesser appleworm	0.0	0.0
Oriental fruit moth	1.6	0.4
Codling moth	5.0	6.8
Spotted tentiform leafminer	5.3	39.9
San Jose scale	0.0	0.0
Dogwood borer	2.4	1.6
Obliquebanded leafroller	10.0	12.6

UPCOMING PEST EVENTS

	43°F	50°F
Current DD* accumulations (Geneva 1/1–6/15/15):	1013	647
(Geneva 1/1–6/15/2014):	982	602
(Geneva "Normal"):	1051	597
(Geneva 1/1–6/22, predicted):	1187	773
(Highland 1/1–6/15/15):	1276	833

Coming Events:	Ranges (Normal ±StDev):	
Spotted tentiform leafminer 2nd flight begins	994–1166	592–728
Pear psylla 2nd brood hatch	967–1185	584–750
San Jose scale 1st flight subsides	864–1238	515–769
San Jose scale 1st gen. crawlers present	1033–1215	619–757
European red mite summer egg hatch	737–923	424–572
Black cherry fruit fly 1st catch	702–934	380–576
Cherry fruit fly 1st catch	755–1289	424–806
Obliquebanded leafroller 1st flight peak	834–1226	485–771
Obliquebanded leafroller summer larvae hatch	1038–1460	625–957
Pandemis leafroller flight peak	883–1189	507–733
Rose leafhopper adults on apple	809–1053	440–622
Oriental fruit moth 1st flight subsides	839–1115	492–692
Lesser appleworm 1st flight subsides	992–1528	603–983

*[all DDs are Baskerville-Emin (B.E.)]

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.

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.