

scaffolds

Update on Pest Management
and Crop Development

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

May 4, 2015

VOLUME 24, No. 6

Geneva, NY

EYE
WATCH

ORCHARD RADAR
DIGEST



Redbanded Leafroller

Peak trap catch and approximate start
of egg hatch: May 3 (H)/May 5 (G).

San Jose Scale

First adult SJS caught on trap: May
14 (H)/May 18 (G).

1st generation SJS crawlers appear:
June 15 (H)/June 19 (G).

[H = Highland; G = Geneva]:

Roundheaded Appletree Borer

RAB egg laying begins: June 1 (H)/June 5 (G).
Peak egg laying period roughly: June 22 to July 6
(H)/June 26 to July 11 (G).

Dogwood Borer

First DWB egg hatch roughly: June 21 (H)/June
25 (G).

Codling Moth

1st generation 3% egg hatch expected: June 5 (H)/
June 9 (G).

Lesser Appleworm

1st LAW trap catch: May 9 (H)/May 10 (G).

Mullein Plant Bug

Expected 50% egg hatch date: May 10 (H)/May
12 (G), which is 6 days before rough estimate of
Red Delicious petal fall date

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch ex-
pected: June 4 (H)/June 8 (G).

Oriental Fruit Moth

1st generation OFM flight starts: May 1 (H)/May
4 (G).

Spotted Tentiform Leafminer

1st STLM flight peak trap catch: May 9 (H)/May
12 (G).

White Apple Leafhopper

1st generation WALH found on apple foliage:
May 9 (H)/May 11 (G).



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READY,
SET...

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

❖❖ The forecast for much of this week promises some early summer weather, so most areas should be within hailing distance of pink bud by the weekend. It's therefore not too early to be thinking of pink bud insect management needs now, so as not to be caught off guard in case we get into one of our famous 'let's floor it' scenarios.

First, if San Jose scale is a concern and you have yet to do anything to head it off, there is still a limited window of suitable management tactics available before foliar development progresses too far to permit effective coverage. If you are intending to use oil, a 1% spray through tight cluster can be quite effective provided you're able to thoroughly cover the wood surfaces. Insecticidal options include Centaur (34.5 oz/A), Esteem (4–5 oz/A), Lorsban (4EC or Advanced at 1.5–4 pt/A) or Supracide 2EC at 3 pt/A). Remember that you are limited to only 1 application of Lorsban in apples per season, whether prebloom as a foliar or trunk spray, or as a postbloom trunk application. Also, if you are waffling about whether this spray is worth the effort and also have some trepidation about potential black stem borer problems, a Lorsban trunk spray "might" offer you some added protection (we're conducting more field trials this season to verify the advisability of this tactic).

The pests of greatest concern at pink bud are usually rosy apple aphid (RAA), oriental fruit moth (OFM), and tarnished plant bug (TPB), with European apple sawfly and plum curculio waiting in the wings. OFM just made its entrance in the Hudson Valley and Geneva today, and it will not be too long before biofix is established in a number of plantings statewide. In blocks with a history of OFM infestation, 1 or 2 traps checked at least weekly will help indicate the timing and relative size of the

first generation population this year. What should be the response when the numbers start building?

In a normal year, the average temperature ranges tend to result in very little egg hatch during pink and bloom, as this usually holds off until petal fall. If we end up with sufficient egg hatch before actual bloom, a pink application of an internal worm material like Altacor, Belt or Delegate would be an option; although this is earlier than we would normally expect to need them, these products would also address codling moth, which would not be far behind an early OFM hatch. For growers wishing to save these A-list products until after petal fall, a B.t. product would be another option from pink to bloom. Regardless, these "what-if" scenarios underscore the value of using (and frequently checking) pheromone traps to set the clock on OFM and CM development in specific blocks. These first flights of the season give us the best opportunity to get on top of internal worm control, because timing and development of the different stages only gets more complicated (i.e., less synchronized) as the season progresses.

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Depending on block history and personal philosophy, RAA and TPB can be either annual challenges, puzzling but token annoyances, or else a complete flip of the coin. Do they occur, do they need to be treated, are they able to be controlled adequately, and does it matter if they're just ignored? These pests also have yet to indicate their potential for problems this season, although it's likely that rosies can be found already in some orchards, given enough inspection. It's possible to scout for RAA at pink, but this is often not practical, considering all the other things demanding your attention at this time. TPB is not a good candidate for scouting, and if the bloom period turns out to be prolonged by cool, wet weather, a pink spray is of little use. You'll need to decide for yourself whether this bug is of sufficient concern to you to justify treating.

We have seen few orchards in western NY (and only slightly more in the Hudson Valley) where TPB control is warranted, simply because the most effective treatment has been to use a pyrethroid, which: a) kills predator mites, and b) still rarely lowers TPB damage enough to be economically justified. If you elect a spray of Ambush, Asana, Baythroid, Danitol, Pounce, Warrior or Gladiator at pink for plant bug, you'll take care of rosy apple aphid (plus mullein plant bug and STLM) at the same time. If RAA is your main concern, you could elect a pink spray (non-pyrethroid options include Actara, Assail, Beleaf, Esteem, Lannate, Lorsban, Thionex, Vydate, or Warrior) if you have the luxury of a suitable application window. Once again, be sure to consider potential impacts on non-target species such as beneficials, and be aware of your bee supplier's concerns about effects on pollinating bees.

Leafrollers are also out there, but only a small portion of the population will be active at this time, so although you might get good control of any larvae you spray now, don't forget that the rest of the population won't be out (and susceptible to sprays) until bloom or petal fall, so it's probably better to wait until then to address this pest.

Finally, if mites normally need attention in a given block, and you haven't elected (or been able to use) a delayed-dormant oil application as a part of your early season mite management program, you'll be needing to rely on either: one of the ovicidal acaricides (Apollo, Savey/Onager, Zeal) available for use, whether before or after bloom; a rescue-type product after bloom (add Acramite, Kanemite, Nexter, and Portal to the above list) that can reduce motile numbers later on if they should begin to approach the threshold; or Agri-Mek, which falls somewhere between these two strategies. Like the true ovicides, Agri-Mek should also be considered a preventive spray, as it needs to be applied early (before there are very many motiles) to be most effective, generally within the first 2 weeks after petal fall. Recall that Proclaim is related to Agri-Mek, and also has some miticidal activity, if you expect to use it at petal fall for leafrollers. For any of the rescue products, the operational threshold (through June) is an average of 2.5 motiles per leaf (see the chart on p. 73 of the Recommends).



PEST FOCUS

Geneva: 1st **redbanded leafroller** and **spotted tentiform leafminer** trap catch 4/30. 1st **Oriental fruit moth** trap catch today, 5/4.

Highland: 1st **lesser appleworm** and **oriental fruit moth** trap catch today, 5/4.

HOT
TIMES

GUIDELINES FOR
MANAGING FIRE
BLIGHT IN 2015
(Kerik Cox, PPPMB,
Geneva; Dave
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LOFT, Albion; Juliet Carroll, NYSIPM,
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❖❖ Last season, fire blight was unusually severe throughout NY and the rest of the Northeastern United States. Moreover, there were many odd tree decline scenarios in 2014, such as a case in Vermont where fire blight ooze was found at silver tip along with other situations where fire blight was associated with stem borers, winter injury, and herbicide damage in scenarios that were impossible to tease apart. Impacts of last season's damage are still being felt in the form of dead or dying trees in the spring of 2015. These situations cause considerable trepidation as apples in eastern NY and southern New England move into bloom this week, a week during which hot weather, oozing cankers from last year, and the predicted rains could create another year of severe fire blight if flowers are not protected from infection.

Last year, some growers in the Hudson Valley and New England applied streptomycin sprays only to young plantings and high-risk cultivars, on the assumption that older orchards of cultivars such as McIntosh, Golden Delicious, and Empire were not very susceptible, and therefore did not warrant protection. Furthermore, the strep sprays were applied only after a string of warm days that allowed an accumulation of high epiphytic infection potential (EIP) because we assumed that sprays were not needed so long as there was no rain, dew, or other source of moisture to move bacteria from the stigmas to the infection sites at the bases of the flowers. On many of those farms, the strep sprays were very effective in protecting trees

to which it was applied, but older trees that had not been protected developed significant amounts of fire blight. As the season progressed, the blight sometimes moved from these older infected trees back into young trees, where shoot blight infections caused additional damage. In retrospect, it appears that delaying the first spray until rain or wetting was predicted allowed too much time for the bacteria to be disseminated in high numbers to older blocks, which generally might have escaped infection if weather favorable for blight had been of a shorter duration.

In the Hudson Valley, this year is shaping up to be a repeat of last year: Weather forecasts are indicating at least a week of very warm weather (highs in the upper 70s and low 80s) as apples are coming into bloom. Some areas may get rain on Tuesday, but other areas may not have any rain or may not yet have trees in bloom on Tuesday. After that, no rain is forecast until next Sunday. If no strep is applied until the end of the week, that would once again allow plenty of time for wide dissemination of fire blight bacteria prior to the first strep application.

To prevent a recurrence of last year's problems, we suggest two specific strategies that should be implemented this year. First, highly susceptible blocks should be sprayed with strep as soon as the EIP exceeds 100 even if no rain or dew has occurred. (This would be Wednesday or Thursday in the lower Hudson Valley.) This approach will eliminate inoculum in the middle of the bloom period rather than allowing it to multiply on flower stigmas and be disseminated without restraint, as will occur if strep applications are delayed until late in the week. Second, when rain finally is predicted after multiple days of warm weather (70 to 80°F), ALL orchards should be treated with strep within 24 hours prior to the rain, rather than focusing treatment only on blocks considered "highly susceptible", because even older trees of less susceptible cultivars will get blight if temperatures re-

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main high for many days during bloom. Thus, we are suggesting a pre-emptive strep application on high-risk blocks after EIP exceeds 100, followed by the usual strep application timing ahead of any subsequent rain(s), with the latter applied to ALL orchards. Where orchards cannot all be covered ahead of rains, strep can be applied within 24 hours after the rain.

Although the specter of streptomycin resistance in western and central NY seems to have disappeared for the moment, the fire blight season can still be very difficult to control if weather favors the pathogen. In this regard, we have continued to refine and update our guidelines for managing fire blight in NY, with an emphasis on young plantings and the registration of Kasumin 2L in the winter of 2015. Kasugamycin is another aminoglycoside antibiotic like streptomycin, and while it doesn't have local systemic activity, it is an effective alternative antibiotic to streptomycin, and provides excellent blossom blight control. We will be continuing to screen fire blight samples for streptomycin-resistant *Erwinia amylovora* in 2015. Information on submitting samples is outlined at the end of the guidelines, but detailed sample submission instructions will be posted in a later issue of Scaffolds.

Below, we present our guidelines for managing fire blight. The guidelines are broken up into four sections: guidelines for production regions where streptomycin resistance has never been detected, chemical management guidelines for high risk regions where streptomycin resistance has been detected, guidelines for new plantings, and guidelines for on-farm nursery production

GUIDELINES FOR PRODUCTION REGIONS WHERE STREPTOMYCIN RESISTANCE HAS NEVER BEEN DETECTED

1 - All fire blight cankers should be removed during winter pruning. Remove all trees with central leader or main trunk infections. Infected wood should

be removed from the orchard and either burned or placed where it will dry out rapidly.

2 - Copper sprays should have been applied at green tip. Processing varieties can be protected with copper as late as 1/2-inch green, depending on requirements of the label.

3 - When blossom infection is forecast, apply at least 24 oz/acre of streptomycin alone. If there are concerns about the effectiveness of streptomycin, submit a sample for testing and follow the guidelines for regions where streptomycin resistance has been confirmed. We suggest including Regulaid (1 pt/100 gal of spray solution) in the first spray, especially if it is applied under rapid drying conditions. Regulaid can be omitted from subsequent applications so as to minimize the leaf yellowing that is sometimes associated with repeated applications of strep.

4 - Prohexadione-Calcium (Apogee) applications [6–12 oz/100 gal (3–6 oz/100 gal for tree <5 years)] for shoot blight should be seriously considered, especially on highly susceptible varieties when apple trees have 1–3 inches of shoot growth, typically late bloom. A second treatment should be made 14–21 days later. This is a preventive treatment and will not be effective if you wait until you see signs of infection.

5 - 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.

6 - If severe blossom blight occurs where strep was applied in a timely manner, contact CCE for SR Ea testing, listed under "Sample Submission" below. No quarantine will be imposed if SR Ea is found in your orchard because strep-resistant fire blight is not a regulated pathogen.

7 - If you need to interplant apple trees in existing orchards where fire blight was observed, wait until late fall, so the bloom on the new trees will be synchronized with the established trees.

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**CHEMICAL MANAGEMENT
GUIDELINES FOR HIGH RISK
REGIONS WHERE STREPTOMYCIN
RESISTANCE HAS BEEN DETECTED
(confirmed SmR Ea)**

Follow the guidelines (above) except for the following differences:

1 - If SmR Ea has been confirmed at your operation:

a - When the first blossom infection is forecast, apply kasugamycin (Kasumin 2L) at 64 fl oz/acre in 100 gallons of water. Do not spray alternate row middles. Do not apply after petal fall. The PHI is 90 days. The REI is 12 hours.

b - At the 2nd high risk period, apply a tank mix of streptomycin at 24 oz/acre in combination with either oxytetracycline* at 32 oz/acre, or a bloom time rate of a registered copper** product.

c - At the 3rd or 4th high risk periods, repeat steps 'a' and 'b', respectively.

2 - If SmR Ea has not been confirmed at your operation, but is present in the region:

a - When the first blossom infection is forecast, apply a tank mix of streptomycin at 24 oz/acre in combination with either oxytetracycline* at 32 oz/acre, or a bloom time rate of a registered copper** product.

b - At the 2nd high risk period, apply kasugamycin (Kasumin 2L) at 64 fl oz/acre in 100 gallons.

c - At the 3rd or 4th high risk period, repeat steps 'a' or 'b', depending on concerns about the effectiveness of streptomycin.

3 - Prohexadione-Calcium (Apogee) sprays should be applied at 6-12 oz/100 gal (3-6 oz/100 gal for tree <5 years) at 1-3 inches shoot growth. A second treatment should be made 14-21 days later. Apogee will not be effective if applied after you see fire blight symptoms.

*Oxytetracycline must be applied before infection occurs, since it is only bacteriostatic (stops bacteria from multiplying) and will leave live cells behind. Therefore, monitor

fire blight forecasts and heed CCE alerts carefully when using oxytetracycline. Data from university field research trials suggest that different formulations of the same antibiotic active ingredient may perform differently in the field. Consult with a specialist before choosing the product for your operation.

**Copper must be applied before infection occurs. Therefore, monitor fire blight forecasts and heed CCE alerts carefully when using copper. Copper may cause fruit russet. Hydrated lime may be used to safen copper. An example would be Badge SC at rate of 0.75 to 1.75 pints/acre buffered with 1-3 lbs of hydrated lime for every 2 pints of Badge to minimize fruit finish damage.

**ADDITIONAL GUIDELINES FOR NEW
PLANTINGS (1-2 years)**

1 - If possible, plant varieties grafted on fire blight-resistant rootstocks.

2 - Trees should be carefully examined for fire blight infections before planting. Infected trees should be discarded. Samples should be submitted for strep resistance testing. Contact CCE for SR Ea testing, listed under "Sample Submission" below.

3 - Immediately after planting, and 14 days later, a copper application should be made using the lower copper rates that are labeled for use after green tip. Ensure that soil has settled to avoid phytotoxicity to roots.

4 - Trees should be scouted at 7-day intervals for fire blight strikes until July 31. Infected trees should be removed as described above. Plantings also need to be scouted 7-10 days after hail or severe summer storms. The NEWA disease forecasting model for fire blight can assist by providing an estimate of symptom emergence following a storm or other trauma event. Also scout the planting at the end of the season (mid-September).

5 - If possible, remove flowers before they open. New plantings may have considerable numbers of flowers the first year, and blossom removal may not

be practical. If this practice is followed, the blossoms should be removed during dry weather and before a lot of heat units have been accumulated and there is a high risk of fire blight infection.

6 - Trees should receive an application of copper at a stage equivalent to bloom. Observe the labeled REI before blossom removal.

7 - To protect any remaining bloom, follow the chemical management program for your regions of streptomycin resistance risk.

8 - Samples of any infections observed after planting should be submitted for strep resistance testing; see contact information below. Infected trees should be removed entirely in these high density orchards.

GUIDELINES FOR ON-FARM NURSERY PRODUCTION

1 - Collect budwood from orchards where fire blight is not established or from a neighboring farm without fire blight.

2 - Limit streptomycin and kasugamycin applications to 2–3 per season. These should be timed according to a disease forecast model prediction or CCE alert.

3 - When fire blight pressure is high and shoots are actively growing, apply copper at the lowest labeled rate to prevent shoot blight.

4 - Before conducting tree management tasks in nursery, apply a copper product at the lowest labeled rate and observe the labeled REI.

5 - When working in the nursery, field workers must wear clean clothing, and should wash hands and disinfect working tools often.

6 - Any pinching or leaf twisting should be done on dry, sunny days with low relative humidity, after the REI of a copper application has expired.

7 - If fire blight is found in the nursery, completely remove the infected trees including the root system, and place them in trash bags between rows. Subsequently, remove the culled trees from between the rows and discard them. Under no circumstances should unbagged infected trees be pulled between nursery rows when trees are wet, otherwise fire blight will be spread down the rows.

8 - Control potato leafhoppers in nursery using a registered neonicotinoid product.

9 - Maintain weed control through cultivation. Apply registered post-emergence herbicides using a shielded boom. There are some residual herbicides registered for use in nurseries.

10 - When trees have reached the desired height, consider applying the lowest labeled rate of Apogee to slow growth and reduce susceptibility to shoot blight. Manage nitrogen levels to balance tree growth and fire blight susceptibility.

SAMPLE SUBMISSION INSTRUCTIONS

If fire blight-infected trees and strikes are observed after proper streptomycin application, call or email one of the persons below to provide you with sample submission instructions, and possibly to come and collect samples and take data on the situation.

- Debbie Breth, Tel: 585-747-6039, email: dib1@cornell.edu

- Juliet Carroll, Tel: 315-787-2430, email: jec3@cornell.edu

- Kerik Cox, Tel: 315-787-2401, email: kdc33@cornell.edu



PHENOLOGIES

Geneva:	5/11, predicted
Apple (McIntosh, Empire): tight cluster	bloom
Apple (Red Delicious): early tight cluster	pink to king bloom
Sweet cherry (early): bloom	petal fall
Sweet cherry (late): white bud	
Peach: easrly pink	bloom
Highland:	
Apple (McIntosh, Red Delicious , Ginger Gold, Empire): pink	
Apple (Ginger Gold): early bloom	
Pear (Bartlett, Bosc): bloom	
Pear (Bosc): white bud	
Peach (Early): full bloom	
Apricot: petal fall	

INSECT TRAP CATCHES (Number/Trap/Day)

	Geneva, NY				Highland, NY	
	<u>4/27</u>	<u>4/30</u>	<u>5/4</u>		<u>4/27</u>	<u>5/4</u>
Green fruitworm	0.1	0.0	0.3	Green fruitworm	0.9	0.6
Redbanded leafroller	0.0	7.3*	12.8	Redbanded leafroller	1.4	18.5
Spotted tentiform leafminer	0.0	0.2*	2.8	Lesser appleworm	–	0.4*
Oriental fruit moth	–	–	0.3*	Oriental fruit moth	–	0.1*
Lesser appleworm	–	–	0.0			
San Jose scale	–	–	0.0			

* first catch

UPCOMING PEST EVENTS

	<u>43°F</u>	<u>50°F</u>
Current DD* accumulations (Geneva 1/1–5/4/15):	209	105
(Geneva 1/1–5/4/2014):	210	97
(Geneva "Normal"):	318	149
(Geneva 1/1–5/11, predicted):	368	216
(Highland 1/1–5/4/15):	320	160
<u>Coming Events:</u>	<u>Ranges (Normal ±StDev):</u>	
Pear psylla 1st egg hatch	174–328	60–166
Redbanded leafroller peak catch	228–378	103–195
Green apple aphid present	127–297	38–134
Rosy apple aphid nymphs present	91–291	56–116
Pear thrips in pear buds	137–221	50–98
Spotted tentiform leafminer 1st flight peak	267–409	123–213
Spotted tentiform leafminer 1st oviposition	143–273	58–130
Obliquebanded leafroller larvae active	158–314	64–160
Comstock mealybug 1st gen. crawlers in pear buds	215–441	80–254
European red mite egg hatch	231–337	100–168
Lesser appleworm 1st trap catch	269–569	125–309
Mullein bug 1st hatch	331–443	163–229
Oriental fruit moth 1st catch	225–327	97–165
1st rose leafhopper nymph on multiflora rose	239–397	96–198
McIntosh pink	271–317	124–160
McIntosh bloom	345–417	171–217

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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