scaffolds

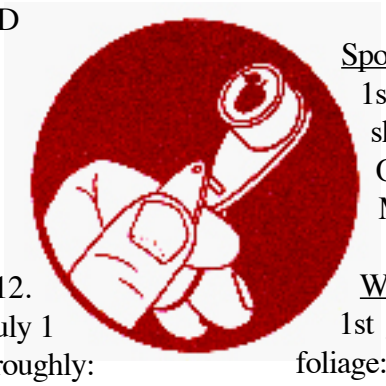
Update on Pest Management and Crop Development

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

May 16, 2016 VOLUME 25, No. 9 Geneva, NY

INSECTS

CHILLY RECEPTION ORCHARD RADAR DIGEST



❖❖ **Geneva Predictions**:

Roundheaded Appletree Borer
RAB egglaying begins: June 12. Peak egglaying period roughly: July 1 to July 14. First RAB eggs hatch roughly: June 27.

Dogwood Borer
First DWB egg hatch roughly: June 29.

Codling Moth
1st generation 3% egg hatch expected: June 12.

Lesser Appleworm
1st LAW trap catch: May 18.

Mullein Plant Bug
Expected 50% egg hatch date: May 21, which is 5 days before rough estimate of Red Delicious petal fall date

Obliquebanded Leafroller
1st generation OBLR flight, first trap catch expected: June 13.

Oriental Fruit Moth
1st generation 55% egg hatch and first treatment date, if needed: June 3.

San Jose Scale
First adult SJS caught on trap: May 26.
1st generation SJS crawlers appear: June 22.

Spotted Tentiform Leafminer
1st generation sapfeeding mines start showing: May 27.
Optimum sample date is around May 28.

White Apple Leafhopper
1st generation WALH found on apple foliage: May 19.

PEST FOCUS

Highland: **San Jose Scale** 1st capture today, 5/16.

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PEST FOCUS
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CURTAIN RISE

CUE THE CHORUS
(Art Agnello, Entomology, Geneva;
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❖❖ Few things in life are well synchronized, least of all tree development during the spring in New York, and this year's yo-yo temperature trend has intensified the normal disparity shown among the state's different growing regions. The result is that we have trees ranging from just entering bloom (or maybe thinking about it) to setting fruits. This period is always tough to nail for timeliness of advice, so we'll be conservative and assume that everyone who isn't actually scheduling their petal fall sprays will at least want to give them some advance planning, since the one thing we can rely on is that the "old faithful" insect pests we always look out for at petal fall will continue their progress towards the newly formed fruits. To that end, this overview will help take your mind off the current fluxes in the weather and make preparations for when things heat up again.

Plum Curculio

Adults move into orchards from overwintering sites in hedgerows or the edges of woods and adults are active when temperatures exceed 60°F, something that has occurred recently and will recur later this week. Adult females oviposit in fruit during both day and night but feed mostly at night. Depending on temperature, overwintering adults remain active for 2–6 weeks after petal fall. Because adults are not highly mobile, orchards near overwintering sites, woodlands, and hedgerows are most susceptible to attack. Fruit damage is usually most common in border rows next to sites where adults overwinter. Although initial postbloom sprays for plum curculio control should begin at petal fall, growers are often unsure how many additional sprays will be necessary to maintain protective chemical residues to prevent subsequent damage throughout the PC oviposition cycle, which varies according to temperatures and weather patterns after petal fall.

Following from the fact that PC activity and oviposition are largely determined by temperature, we use an oviposition model to determine when control sprays after petal fall are no longer necessary to protect fruit from PC damage. This model is based on the assumption that residues from sprays applied after petal fall need to be maintained on fruit and foliage only until PC adults stop immigrating into orchards, which happens to correspond to the time when about 40% of the oviposition cycle is complete. This is predicted by the model to occur at 308 DD (base 50°F) after petal fall of McIntosh. Most probably, this strategy works because, after 40% of PC oviposition is complete, adults usually do not move into the orchard from outside sources, or within orchards from tree to tree. Therefore, by this time, adults residing in treated trees have already been killed by insecticide residues and are unable to complete the remainder of their normal oviposition cycle.

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In order to use this strategy: (1) Treat the entire orchard at petal fall with a broad spectrum insecticide. (2) Start calculating the accumulation of DD after petal fall of Macs (base 50°F); this is easily done from the NEWA Apple Insect Models page (http://newa.cornell.edu/index.php?page=apple-insects) by entering the petal fall date for your area. (3) No additional sprays are necessary whenever the date of accumulation of 308 DD falls within 10–14 days after a previous spray. We'll attempt to give local updates for the major fruit areas as the post-PF period progresses. In cherries and other stone fruits that are already at shuck fall, sprays should start (or should have started, as appropriate) at the first opportunity. Recall that, in addition to the industry standard broad-spectrum materials such as Imidan, some additional options may be considered: Lorsban 75WG can still be used at petal fall in tart cherries, but obviously is no longer labeled for this use in apples; also, Avaunt and Actara are effective for plum curculio in apples and pears, and Avaunt is also labeled in stone fruit as another PC option. Delegate and Altacor both have some activity on this pest, but should not be considered as the first choices in high-pressure blocks. Another option would be Exirel, a 2nd-generation diamide with better efficacy against this pest.

European Apple Sawfly

This primitive bee and wasp relative shows a preference for early or long-blooming varieties with a heavy set of fruit. This insect is generally more of a pest in eastern N.Y., although it has been gradually making its presence known in the more western sites, and now frequently reaches as far as Wayne Co. (or beyond). The adult sawfly emerges about the time apple trees come into bloom and lays eggs in the apple blossoms, which means they can be found now, in between temperature dives into the 30s. Young larvae begin feeding just below the skin of the fruits, creating a spiral path usually around the calyx end. This early larval feeding will persist as a scar that is very visible at harvest. Following this feeding, the larva usually begins tunneling toward the seed cavity of the fruit or an adjacent fruit, which usually causes it to abort. As the larva feeds internally, it enlarges its exit hole, which is made highly conspicuous by a mass of wet, reddish-brown frass. The frass may drip onto adjacent fruits and leaves, giving them an unsightly appearance. The secondary feeding activity of a single sawfly larva can injure all the fruit in a cluster, causing stress on that fruit to abort during the traditional "June drop" period.

Certain insecticides that control this pest also adversely affect bees, which can pose a problem at petal fall because certain apple varieties lose their petals before others. In blocks of trees where petal fall has occurred on one variety but not the others, the variety that has lost its petals is likely to sustain some curculio or sawfly injury until an insecticide is applied. Some insecticides with activity against both plum curculio and sawfly -- like Avaunt and Actara -- may have a slight advantage over the conventional OP Imidan in this case. Assail represents another option for controlling sawfly; it's not very active against plum cur-

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culio, but will do a good job against rosy apple aphid and spotted tentiform leafminer, as well as sawfly, at this timing. Altacor and Exirel are both rated high in their control efficacy against sawfly. To minimize the hazard to honey bees, apply any pesticide only when no bees are actively foraging on blooming weeds (evening is better than early morning).

Obliquebanded Leafroller

Larvae overwintering as 1st or 2nd stage caterpillars may have had the ability to grow to a noticeable size, although we haven't actually seen any up to this point, so most are likely still relatively small. While you're assessing bud viability, it would be prudent to have a quick look for later-stage larvae in problem blocks to determine whether a treatment against the overwintered brood should be included in your petal fall plans. Scout the blossom clusters or foliar terminals for larvae feeding within both the flowers and rolled leaves; a 3% infestation rate could justify an application to minimize overwintered fruit damage and help reduce summer populations.

Among the selective insecticides available, Intrepid and Rimon have been successful at this timing, and B.t. products, which can be used while blossoms are still present, include Dipel, Deliver, Agree, Biobit and Javelin. More recently, Proclaim has been shown to be very effective at the petal fall timing, and also provides activity against early season mite populations. Delegate, Altacor, Exirel and Belt all offer very good efficacy against not only OBLR, but also the internal leps. Pyrethroids such as Asana, Baythroid, Danitol, Warrior, Proaxis or Leverage may also be effective, depending on past use history, but be aware of their broad-spectrum effects, which can work both for and against you, according to your approach to conserving beneficial mites and insects.

Oriental Fruit Moth

Biofix is spread out across NY again this year, ranging from April 25 in the Hudson Valley to around May 2 in Geneva and May 11 in Wayne Co.; the cooler temperatures over the past week will likely continue the indistinct pattern of emergence in most sites. Use the NEWA Apple Insect Models page to chart current degree day (base 45°F) progress towards the recommended totals of 170 (in peaches) and 350 (in apples) as the timing at which to apply a protective spray. To maximize the efficacy of 1st brood control, peach growers should use one of the suggested options from the Recommends starting at petal fall, backed up 10–14 days later. In apples, in addition to Delegate, Altacor, Exirel and Belt, a number of the petal fall selection of insecticides will do an acceptable job of controlling this generation, including Imidan, the pyrethroids, Intrepid, Assail, and Avaunt.

European Red Mite

We haven't actually received any reports of problematic red mite numbers showing up just yet. However, because the prebloom conditions were so unfavorable for applications of oil or even ovicides, it would be prudent to have a look at your rapidly expanding terminal shoots for evidence of hungry motile mites, and consider an early "summer" application of a suitable material to head off problems before they get out ahead of you; it's suitable to use the regular June 2.5/leaf threshold (p. 73 in the Recommends), even though we're 2 weeks away from June 1. There are numerous choices of products available at this time, including the traditionally considered ovicides such as Apollo, Savey and Onager (if not already used this season), as well as Agri-Mek, which can still easily get into the tender leaf tissue to do its work, plus a host of moderate- and quicker-acting maintenance/rescue materials such as Zeal, Kanemite, Nexter, Portal, Acramite, Envidor,

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and Nealta. Additionally, if you're planning to apply Proclaim for OBLR, you'll get some miticidal activity too. Be aware of seasonal use limits and IRAC rotational considerations with anything you use now. ❖❖

DISEASES

INFECTION DETECTION

APPLE SCAB AND QUINCE RUST NOW SHOWING IN HUDSON VALLEY

(Dave Rosenberger, Plant Pathology Highland; dar22@cornell.edu)

❖❖ Apple scab is now visible in some unsprayed trees in the Hudson Valley. I found a few scab lesions on apple leaves in my garden in New Paltz on Saturday, and this morning I found scab on a few Jerseymac fruitlets on unsprayed trees at the Hudson Valley Lab. In both cases, infections were initiated prior to the May 1–5 wetting period that triggered massive releases of apple scab ascospores because those infections have not yet had enough time to develop visible symptoms. The diffuse infections (almost like sheet scab) on one of the Jerseymac fruitlets (Fig. 1) suggests multiple spores were present at the same time to initiate these infections, something that might have happened if the infection were initiated by apple scab conidia that overwintered in the buds. Overwintering of conidia in buds is not very common, but it is known to occur in trees with limited spray programs the previous year, which would have been the case in the trees where these infections were found. The likelihood that at least some of the fruitlet infections that I found today might have originated with conidia from buds is further supported by the fact that the overall incidence of scab on unsprayed fruitlets in these Jerseymac trees was quite low, something that would not be expected if there had been enough ascospores released to trigger the massive infections on a single fruitlet as shown in Figure 1. In any case, the fruit infections that I found today indicate that anyone who omitted all sprays prior to May 1 would have been at risk for pre-bloom scab infections, even though wetting periods prior to May 1 were considered only marginally sufficient for ascospore infections.

Fig. 1. Scab on Jerseymac fruit, May 16.

The same unsprayed Jerseymac trees are also showing initial fruitlet symptoms (raised bumps, Fig. 2, next page) of quince rust infections that presumably occurred during the long wetting period of May 1–5. However, other fruitlets also showed some ribbing and russet related to frost damage. On some fruit, it is difficult to differentiate between early symptoms of quince rust and deformations caused by frost injury, but differences between the two will become obvious within several weeks as fruit grow larger and quince rust infections become more evident. ❖❖

Fig. 2. Early symptoms of quince rust (bumps) on Jerseymac fruit noted on May 16.

GENERAL INFO

FRUIT FIELD DAY

The Cornell Fruit Field Day will be held in Geneva on Wednesday, July 20. This event, being organized by Cornell University, the NYS Agric. Experiment Station, CALS Fruit Program Work Team, and Cornell Cooperative Extension, will feature ongoing research in berries, hops, grapes, and tree fruit. All interested persons are invited to learn about the fruit research under way at Cornell University. Attendees will be able to select from tours of different fruit commodities. It will be based at the NYSAES Fruit and Vegetable Research Farm South, 1097 County Road No. 4, 1 mile west of Pre-emption Rd. in Geneva, NY. Admission is $50/person ($40 for additional attendees from the same farm or business). Pre-registration is required; walk-in registration may be available for a $10 surcharge on the day of the event. Please use the registration link below to register via credit card:
http://events.cals.cornell.edu/ffd2016

CORNELL AND CCE EMPLOYEES get free admission, but please pre-register using the same link; there's a **Cornell Staff** tab at the top of the home page, which will take you to a page to pre-register and select a lunch option.

To participate as a sponsor, see the website page or contact Shelly Cowles (315-787-2274; mw69@cornell.edu).

PHENOLOGIES

Geneva:	Current	5/23, Predicted
Apple (McIntosh):	80% petal fall	petal fall
Apple (Empire/Red Delicious):	full bloom	petal fall
Pear (Bartlett/Bosc):	50%-90% petal fall	fruit set
Sweet Cherry (early):	petal fall	fruit set
Sweet Cherry (late):	90% petal fall	fruit set
Tart Cherry:	full bloom	fruit set
Plum:	petal fall	fruit set

Highland:

Apple	(McIntosh): fruit set
	(Empire/Red Delicious/Ginger Gold): fruit set
Pear	(Bartlett, Bosc): fruit set
Peach	(early): petal fall-shucks off
	(late): petal fall-shucks on

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–5/16/16):	391.5	173.2
(Geneva 1/1–5/16/2015):	456.0	274.2
(Geneva "Normal"):	467.3	250.5
(Geneva 1/1-5/23, predicted):	489.4	230.1
(Highland 1/1–5/16/16):	677.9	324.3

Coming Events:	Ranges (Normal ±StDev):	
American plum borer 1st catch	390-516	194-284
European red mite egg hatch complete	368-470	182-280
Lesser appleworm 1st adult catch	271-565	127-307
Lesser appleworm 1st flight peak	354-772	176-442
Lesser peachtree borer 1st adult catch	480-676	253-375
Mirid bugs 50% hatch	429-473	208-262
Obliquebanded leafroller larvae active	158-314	64-160
Oriental fruit moth 1st flight peak	331-537	168-286
Plum curculio oviposition scars present	485-589	256-310
San Jose scale 1st adult catch	435-615	218-340
Spotted tentiform leafminer mines present	367-641	170-342
White apple leafhopper nymphs on apple	302-560	146-308
McIntosh petal fall	448-524	232-284

all DDs Baskerville-Emin, B.E.

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	5/9	5/12	5/16
Green Fruitworm	3.0	0.0	0.0
Redbanded leafroller	11.5	31.0	21.0
Spotted Tentiform Leafminer	40.0	22.0	18.0
Oriental Fruit Moth	5.5	31.0	19.5
San Jose Scale	–	–	0.0

Highland, NY

	5/9	5/16
Green Fruitworm	0.1	0.0
Redbanded leafroller	2.6	2.7
Spotted Tentiform Leafminer	7.6	3.6
Oriental Fruit Moth	2.7	3.9
Lesser Appleworm	0.3	2.5
San Jose Scale	0.0	75.4*

* = 1st catch

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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