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Update on Pest Management and Crop Development

FRUIT JOURNAL

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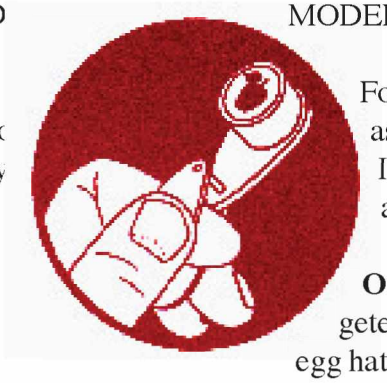
INSECTS

TIME PIECE

ORCHARD RADAR DIGEST (Art Agnello Entomology Geneva)



MODEL BUILDING

Following are the available readings as of today.

Insect model degree day accumulations:

❖❖ Geneva Predictions:

Roundheaded Appletree Borer

RAB peak emergence: June 13.

RAB egglaying begins: June 8. Peak egglaying period roughly: June 28 to July 12.

Codling Moth

Codling Moth development as of June 8: 1st generation adult emergence at 52% and 1st generation egg hatch at 3%.

1st generation 3% CM egg hatch: June 8 (= target date for first spray where multiple sprays needed to control 1st generation CM).

1st generation 20% CM egg hatch: June 16 (= target date where one spray needed to control 1st generation codling moth).

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 11.

San Jose Scale

First generation SJS crawlers appear: June 20.

Spotted Tentiform Leafminer

2nd STLM flight begins around: June 18.

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Oriental Fruit Moth (Apples - targeted spray application at 55–60% egg hatch, predicted at 350–375 DD base 45°F after biofix):

Location	Biofix	DD (as of 6/7)
Geneva	April 27	537
Albion	May 4 *	422
Appleton (South)	May 4 *	369
Sodus	May 4 *	369
Williamson	May 4 *	375

* (estimated)

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Codling Moth (targeted spray application at newly hatching larvae, predicted at 250–360 DD base 50°F after biofix):

Location	Biofix	DD (as of 6/7)
Sodus	May 14	216
Williamson	May 14 (lake site)	208
Albion	May 15	220
Geneva	May 18	219

Plum Curculio (spray coverage required until 308 DD base 50°F after biofix; i.e., McIntosh petal fall):

Location	Biofix	DD (as of 6/7)
Sodus	May 15*	202
Geneva	May 18	219
Albion	May 18	202

* (estimated)

[NOTE: Consult our mini expert system for arthropod pest management, the
NEWA Apple Insect Models Degree Day Calculator:
http://newa.nrcc.cornell.edu/newaModel/apple_pest
Find accumulated degree days for the current date with the
Degree Day Calculator:
http://newa.nrcc.cornell.edu/newaLister/dday
Powered by the NYS IPM Program's NEWA weather data and ACIS, Northeast Regional Climate Center] ❖❖

ROLLIN' DOWN THE RIVER

HUDSON VALLEY INSECT PEST MANAGEMENT UPDATE – OBLIQUEBANDED LEAFROLLER

(Peter Jentsch, Entomology, Highland)

❖❖ On Sunday, May 31st, we had our first pheromone trap captures of obliquebanded leafroller (OBLR) males with an average of 5 in our traps today here at the Hudson Valley Lab in Highland (Table 1). Given this as a biofix and with 'sustained catch', we can now begin to monitor degree days to help in timing applications targeted at the larval hatch of OBLR.

Using the biofix of May 31, accumulating 360 DD43 will bring us to 1st hatch. 'If' temps remain cool (min 50s / max 70s), we predict June 18th to be early larval emergence in HIGHLAND, NY (southern orchard OBLR emergence will be earlier, northern orchards later). However, if temps increase during the evening or daytime, emergence will be earlier. The inverse is true if temperatures fall. If cool temperatures are sustained, OBLR egg laying and hatch will be extended and multiple applications will be required for control in heavily infested blocks.

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Table 1. Hudson Valley Pheromone Trap Captures During the 1st Week of June.

Date	Trap Location	LAW	OFM	CM	OBLR
5/31/09	Warwick	46	7	3	1
5/31/09	Campbell Hall	35	12	7	7
5/31/09	Marlboro	138	—	10	5
5/31/09	Milton	28	3	10	5
6/1/09	HVL - Highland	52	0	4	2
6/3/09	HVL - Highland	—	—	—	5
5/31/09	Red Hook	41	2	4	0
5/31/09	Hudson	62	—	1	1
5/31/09	Altamont	106	—	36	2

For conventional insecticide use, such as the organophosphates (OPs), carbamates, and pyrethroids, the first sprays should be targeted at first hatch to control larvae before they can damage fruit. OBLR are resistant in the Hudson Valley and western NY to the OP azinphos-methyl (Guthion), and should not be relied upon for control. Some farms are still achieving control with phosmet (Imidan) and the pyrethroids. Keep in mind that Lepidoptera larva have been known to more easily detoxify the pyrethroids as temperatures increase (above 80°F), reducing their effectiveness.

Good, thorough coverage is critical for effective leafroller management with materials requiring ingestion to be effective, including most of the newer insecticides (Table 2).

The Bts are most effective when applied during warm weather conditions (daily highs in the 70s) and are most effective against smaller larvae: 2–4 sprays at the low rate on a 7-day interval, starting 10–12 days after first adult catch, has been shown to be very effective in field studies. Bt products are generally more effective with a lower tank pH.

SpinTor is a good choice for leafroller control where the OPs and pyrethroids have been found to be prone to failure. SpinTor is more effective with the addition of a penetrating surfactant. It has a relatively short residual (7–10 days), providing some contact efficacy against larvae feeding on growing terminals. Delegate (spinetoram), a synthetic spi-

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Table 2. Insecticide Options for OBLR Resistance Management.

Product	IRAC Class*	Life Stage	OBLR Timing	Residual	Mite-Flaring Potential
Guthion	1B (OPs)	larvae	360 DD	10–14 d	moderate
Lannate	1A (Carbamates)	larvae	360 DD	5–7 d	mod-high
Asana	3A (Pyrethroids)	larvae	360 DD	5–7 d	high
SpinTor/ Delegate	4 (Spinosyns)	larvae	360 DD	7–10 d	low
Dipel	11 (Bt)	larvae	320 DD	5–7 d	low
Intrepid	18 (IGR)	eggs/older	260/	> 14 d	low
		larvae	>500 DD	—	low

*Insecticide Resistance Action Committee (Mode of action classification group; pest populations are more likely to exhibit cross-resistance to materials within the same group)

nosyn chemical with greater efficacy and a broader spectrum, is an "upgraded spinosad" for leafroller and codling moth management, and has proven to be very effective during its "trial run" in the Hudson Valley last year. Dow AgroSciences will soon replace SpinTor with Delegate in the conventional apple market, maintaining the Entrust spinosad formulation for organic leafroller management.

If Intrepid is elected, it can be employed early (applied at 260 DD), targeted against oblique-banded leafroller egg masses. As leafroller larvae emerge, they ingest the insecticide on the egg "shell". Intrepid can also be used later on older larvae for fruit protection. Intrepid has a long residual and should be reapplied, where necessary, on a 14-day schedule to cover new terminal growth. Intrepid is also more effective with the addition of a penetrating surfactant.

AND A FEW OTHERS TO CONSIDER

Plum curculio: 335.7 degree days (base 50°F) have accumulated since petal fall. Plum curculio have completed immigration into the orchard (according to the plum curculio model value of 308 DD, which occurred on 6/7, based on the Skybit extended forecast). There is no need to make additional applications for plum curculio. (in the Hudson Valley)

San Jose scale: Based on Skybit data, 551.0 DD units have accumulated to date. The 1st generation of San Jose scale is predicted to begin emergence after 500 DD (base 50°F) have accumulated from March 1, 2009. We expect this to begin after 6/6. Insecticide application for SJS control should be timed to ensure that some residue remains on the trees when crawlers emerge.

Codling Moth: The flight of 1st generation codling moth started in Highland on the 5/11. Codling moth hatch began approximately 220 DD after the first flight, occurring on 5/27. Cool temperatures have delayed emergence of the flight and mating, resulting in extended egg laying. In orchards where trap numbers exceed 5 adults per week, and fruit damage from 1st generation CM has been observed in the past, applications directed at larvae should be made. However, in most years, residue from plum curculio applications at 1st cover (typically the OPs) have adequately controlled this generation of codling moth. The use of materials such as Avaunt or Actara (which are not OPs) may require additional insecticide applications directed specifically at the codling moth. Laboratory bioassays testing topically applied Avaunt against CM suggest that toxicity against neonate larvae and eggs is only low–moderate. The neonicotinoid insecticides Assail and Calypso show excellent activity against the codling moth.

Rose leafhopper: The migration of rose leafhopper has begun with first adults arriving in Highland on Friday (6/5). In most years this event correlates with the onset of multiflora rose (*Rosa multiflora*) bloom. Sevin (carbaryl) used during the late thinning window has been effective at reducing the immigrating RLH adult population, and neonicotinoids used at 2nd cover and for codling moth management will also manage immigrating RLH because they tend to oviposit in older foliage containing the active neonicotinoid insecticide. Nymphs will begin to emerge by mid-June (6/11 in 2007). The rose leafhopper nymph can be distinguished from the white apple leafhopper nymph by its dark spots at the bases of setal hairs on its thorax (see RLH nymph below). ❖❖

EASY DOES IT

CREEPING INTO SUMMER

(Art Agnello, Entomology, Geneva)

❖❖ Marking a distinct difference from last season, most portions of the state are still awaiting the arrival of genuine summer weather, and that includes our jointy-legged friends who depend so closely on those heat units to do what comes naturally (fly, lay eggs, hatch, chew, tunnel, etc.). According to the heat unit models, most western NY sites are only about 2/3 of the way through the plum curculio immigration/oviposition period that requires faithful protection of the developing fruitlets, so if your most recent cover spray was last week, there may still be the need to maintain an effective residue well into next week.

Internal leps seem to be following suit. Preventive sprays against our quick-starting (then slow-poking) OFM populations should have gone on by now, and moth catches from the first generation are already starting to decline. Codling moth emergence was a bit fragmented as a result of the prolonged cool temperatures during the middle of May, so their 1st brood egg hatch is just getting under way now. This means that those growers specifically targeting this species should probably spray this week and then follow up in about 10–14 days, placing this window squarely in between the ones for plum curculio and obliquebanded leafroller for some orchards. This may once again result in having to apply bi-weekly cover sprays (same as last year but for different reasons), but that's just the way things have turned out so far.

Other arthropods of note include aphids, leafrollers and mites, all of which are still keeping us somewhat in suspense, but all of these should be making their presence known before long. The first green aphid populations (and rosy apple aphid infestations) have been seen building in Geneva research orchards, and only the earliest red mites are evident. We expect our first OBLR moth catch in Geneva any day now (the Hudson Valley recorded theirs over a week ago, as noted above), so please take a moment now for a bit of foliar inspection to keep on top of foliar health issues before the situation has a chance to gallop away. ❖❖

PEST FOCUS

Geneva:
1st **pandemis leafroller trap** catch, which precedes 1st **obliquebanded leafroller** trap catch by 0–7 days, occurred today, 6/8.

Highland:
Rose leafhopper adults moving into apple. 1st **obliquebanded leafroller** trap catch 5/31.

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	6/1	6/4	6/8
Redbanded leafroller	1.5	0.1	0.1
Spotted tentiform leafminer	0.5	0.7	0.3
Oriental fruit moth	0.6	1.0	0.1
Lesser appleworm	0.1	0.0	0.0
Codling moth	1.0	0.7	0.5
San Jose scale	0.6	0.8	0.0
American plum borer	0.5	1.0	0.5
Lesser peachtree borer	0.5	0.1	0.1
Peachtree borer	0.0	0.0	0.0
Pandemis leafroller	0.0	0.0	0.5*
Obliquebanded leafroller	0.0	0.0	0.0
Dogwood borer	–	–	0.0

Highland, NY

	6/8
Redbanded leafroller	0.0
Spotted tentiform leafminer	36.6
Oriental fruit moth	20.3
Lesser appleworm	17.9
Codling moth	1.7
Lesser peachtree borer	0.2
Obliquebanded leafroller	4.6
Dogwood borer	0.1
Peachtree borer	0.0

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–6/8/09):	820	465
(Geneva 1/1–6/8/2008):	874	510
(Geneva "Normal"):	833	474
(Geneva 1/1–6/15 Predicted):	966	562
(Highland 3/1–6/8/09):	988	555

Coming Events:	Ranges (Normal ±StDev):	
Redbanded leafroller 1st flight subsides	567–873	313–549
American plum borer 1st flight peak	617–953	336–576
Black cherry fruit fly 1st catch	702–934	380–576
Codling moth 1st flight peak	593–1017	325–603
Rose leafhopper adult on multiflora rose	689–893	366–498
Rose leafhopper adult on apple	809–1053	440–622
Spotted tentiform leafminer 1st flight subsides	666–944	366–572
European red mite summer eggs hatch	737–923	424–572
Pear psylla summer adults present	737–885	428–526
Pandemis leafroller 1st catch	766–914	432–522
Obliquebanded leafroller 1st catch	827–939	475–567
Obliquebanded leafroller 1st flight peak	843–1139	491–707
Cherry fruit fly 1st catch	755–1289	424–806
Dogwood borer 1st catch	759–1503	433–941
Oriental fruit moth 1st flight subsides	827–1111	481–693

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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