

UNDER THE CRUST

SCALING BACK

(Peter Jentsch &
Art Agnello,
Entomology,
Highland &
Geneva; pjj5@cornell.edu
& ama4@cornell.edu)



❖❖ We should soon be seeing the emergence of crawlers of San Jose scale (SJS), *Quadraspidiotus perniciosus* (Comstock) from under the overwintered adult female scale covers on apple trees. SJS has become a primary fruit pest in many orchards across the region over the past 10 years, as older chemistries such as PennCap-M and Lorsban, which once held this insect in check, have been removed from the pest management toolbox. With little in the way of residual insecticide in the orchard after the threat of plum curculio has passed, there is little to keep this insect from gaining a foothold in tree fruit blocks, which invariably leads to severe economic injury if left unmanaged. Many producers find this insect very difficult to eradicate. Multiple applications targeting all (up to three) generations using products with different modes of action appear to work best. The pheromone-based model we now use focuses on the adult flight as a biofix, predicting SJS crawler emergence at 310-400 DD (base 50°F). This year, the first adults were observed in traps on May 19 in Highland (traps in Geneva have failed to catch any, which is probably due to low population levels in our trap location); to date we've accumulated 273 DD towards this threshold in Highland (see the Model Building section in this issue). Therefore, the onset of crawler emergence is not far off.

We are quite fortunate to have a number of effective insecticides to assist us in managing this insect during key timing windows of the growing season. The window of opportunity for using a material such as Lorsban for this generation, which would have needed to be applied pre-bloom, has passed. Our options now include contact insecticides or insect growth regulators that will target the emerging crawlers.

Centaur 0.7WDG, an insect growth regulator (IGR; IRAC Class 16), acts to inhibit the synthesis of chitin. Esteem 35WP, also an IGR (Class 7), functions as a juvenile hormone mimic, inhibiting metamorphosis from one stage to another. Moven-to 240SC (lipid biosynthesis inhibitor; IRAC Class 23) is also effective when applied preventively, as its systemic activity requires some time for it to become established in the woody tissues. All these insecticides are most effective when directed against the first appearance of crawlers, yet have no contact toxicity and tend to act very slowly. Assail
continued...

IN THIS ISSUE...

INSECTS

- ❖ San Jose scale/White prunicola scale management

GENERAL INFO

- ❖ Field Days - Organic apple pest mgt

MODEL BUILDING

ORCHARD RADAR DIGEST

PEST FOCUS

TRAP CATCHES

UPCOMING PEST EVENTS

and Admire Pro (Class 4A) are both broad-spectrum neonicotinoids that can be effective when directed against emerging crawlers. The efficacy of some of these materials (e.g., Movento, Assail, Centaur) is improved by the addition of an adjuvant with penetrating properties; however, Esteem and Admire Pro can be used effectively without the use of a penetrant. Remember, rotating classes of insecticides for each generation will delay the onset of resistance. Making multiple applications of the same class or same insecticide at a 14-day interval for the same generation is recommended.

Also bear in mind that we have been seeing another scale species, white Prunicola scale (*Pseudaulacaspis pentagona*), which affects stone fruits as well as apples, and appears as an infestation of numerous white scales that cluster on the trunk and scaffolds, giving them a whitewashed appearance (see Scaffolds No.3, April 10, 2017: <http://www.scaffolds.entomology.cornell.edu/2017/SCAFFOLDS-4-10-17.pdf>). Feeding reduces tree vigor, and foliage of affected trees may become sparse and yellow; heavy infestations can cause death of twigs, branches and entire trees if left unattended. This species overwinters as an adult female and deposits eggs in the spring. The same insecticides as for SJS can be used against crawlers in mid-June through early July (about 700–1150 DD base 50°F from March 1). We are currently at about 456 DD in Geneva and 566 in Highland, which means that the window for application against this pest should coincide very well with a San Jose scale timing. ❖❖

MODEL BUILDING

Insect model predictions for Highland[H]/Geneva[G]

[Source: NEWA Apple Insect Models, <http://newa.cornell.edu/index.php?page=apple-insects>]

Plum Curculio emergence complete at 308 DD50 from McIntosh petal fall (currently @ 293[H] / 168[G]).

Codling Moth spray window for ovicides at 150 DD50 and for larvicides at 250-360 DD50 after biofix (currently at @ 276[H] / 168[G]).

Obliquebanded Leafroller larval emergence @ 350 DD43 from biofix (currently @ 107[H]).

San Jose Scale crawler emergence @ 310 DD50 after 1st flight (currently @ 273[H]) or ~500 DD from March 1 (currently @ 566[H] / 456[G]).

ORCHARD RADAR DIGEST

[H = Highland; G = Geneva]:

Roundheaded Appletree Borer

RAB egg laying begins: May 31 (H)/June 9 (G). Peak egg laying period roughly: June 22-July 6 (H)/June 27-July 11. First RAB eggs hatch roughly: June 15 (H)/June 24 (G).

Dogwood Borer

First DWB egg hatch roughly: June 17 (H)/June 24 (G).

continued...

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 pm Monday to:

scaffolds FRUIT JOURNAL
Dept. of Entomology
NYSAES, Barton Laboratory
Geneva, NY 14456-1371
Phone: 315-787-2341
FAX: 315-787-2326
E-mail: ama4@cornell.edu

Editor: A. Agnello

This newsletter available online at:
<http://www.scaffolds.entomology.cornell.edu/index.html>

Codling Moth

Codling moth development as of June 5:

1st generation adult emergence at 59% (H)/ 35% (G) and 1st generation egg hatch at 6% (H)/ 0% (G).

1st generation 3% egg hatch expected: June 2 (H)/ June 12 (G).

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 1 (H)/June 10 (G).

San Jose Scale

1st generation SJS crawlers appear: June 12 (H)/ June 20 (G).

Spotted Tentiform Leafminer

2nd STLM flight begins around: June 11 (H)/June 18 (G).

PEST FOCUS**Geneva:**

Rosy Apple Aphid and Woolly Apple Aphid infestations noted in unsprayed apple plantings.

Highland:

Sparganothis Fruitworm, Variegated Leafroller, Tufted Apple Bud Moth 1st trap catch today, 6/5.

**EVENT ANNOUNCEMENTS****FIELD DAYS****What's New in Insect Pest Management for Organic Apples – hosted by NOFA-NY**

Presenters: Cornell researchers Arthur Agnello, Elson Shields, Peter Jentsch, Dept. of Entomology. Participants will learn about established and newly-developed organic orchard management tools and techniques for plum curculio (PC), codling moth (CM) and oriental fruit moth (OFM). Trials utilizing entomopathogenic nematodes for biological control of PC show promise. Participants will learn how the nematodes can be reared on the farm, applied, and their effectiveness evaluated. Mating disruption has been available for CM and OFM control for a number of years; presenters will review some of the most promising methods of implementing this tactic, such as hand-applied dispensers and automated misting devices. Finally, this farm is using pest-specific insect viruses against these moth pests, so a review of the principles and preliminary results of pest-specific viruses in a pest control program will be included. This event is produced by NOFA-NY with support from the following: The New York Farm Viability Institute, NYS Specialty Crops Block Grant Program, and Toward Sustainability Foundation.

- June 13, 1:00 pm-4:00 pm, Bittner-Singer Orchards at Marjim Manor, 7171 East Lake Road (Route 18), Appleton, NY 14008
- June 15, 1:00-4:00 pm, Clarke's Prospect Farm, 4 Deyo Dr., Gardiner, NY 12548

Pre-registration online is strongly encouraged, but walk-ins are welcome; cost is \$15/individual, \$25/two or more people from same farm. To register, visit <http://bit.ly/2qkSwsJ> or call the NOFA-NY office at (585) 271-1979, x512.

continued...

INSECT TRAP CATCHES (Number/Trap)								
Geneva, NY				Highland, NY				
	<u>5/30</u>	<u>6/2</u>	<u>6/5</u>		<u>5/22</u>	<u>5/30</u>	<u>6/5</u>	
Redbanded leafroller	2.5	1.0	0.0	Redbanded leafroller	22.0	1.5	0.0	
Spotted tentiform leafminer	1.0	0.5	0.5	Spotted tentiform leafminer	2.5	0.0	1.0	
Oriental fruit moth	5.5	5.5	3.5	Oriental fruit moth	9.0	3.5	3.0	
Codling moth	15.5	10.5	6.5	Lesser appleworm	5.5	2.0	11.5	
San Jose scale	0.0	0.0	0.0	Obliquebanded leafroller	0.0	0.5*	4.5	
Lesser peachtree borer	7.0	0.0	0.0	Codling moth	49.5	48.5	13.0	
Peachtree borer	0.5	2.0	0.0	San Jose scale	30.5*	0.0	1.0	
				Sparganothis fruitworm	0.0	0.0	1.0*	
				Variegated leafroller	0.0	0.0	4.0*	
				Tufted Apple Bud Moth	0.0	0.0	3.5*	

* first catch

UPCOMING PEST EVENTS			
		<u>43°F</u>	<u>50°F</u>
Current DD*	(Geneva 1/1–6/5/17):	782.9	412.0
accumulations	(Geneva 1/1–6/5/16):	817.8	469.8
	(Geneva "Normal"):	820.0	478.1
	(Geneva 1/1-6/12, predicted):	932.4	512.5
	(Highland 1/1–6/5/17):	1051.2	590.5
<u>Coming Events: Ranges (Normal ±StDev):</u>			
American plum borer 1st flight peak		601-967	329-585
Black cherry fruit fly 1st catch		702-934	380-576
Cherry fruit fly 1st catch		755-1289	424-806
Codling moth 1st flight peak		558-971	306-574
Dogwood borer 1st catch		754-1243	438-755
European red mite summer egg hatch		737-923	424-572
Obliquebanded leafroller 1st catch		795-980	462-591
Oriental fruit moth 1st flight subsides		828-1106	486-685
Pandemis leafroller flight peak		889-1188	512-736
Peachtree borer 1st catch		801-1326	463-819
Redbanded leafroller 1st flight subsiding		601-892	338-556
San Jose scale 1st flight subsiding		864-1238	515-769
Spotted tentiform LM 1st flight subsiding		676-947	376-575
White apple LH 1st brood adults present		679-1041	380-694

*all DDs 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.