

scaffolds

Update on Pest Management
and Crop Development

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

July 1, 2013

VOLUME 22, No. 15

Geneva, NY

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JULY
KIT?

ORCHARD
RADAR
DIGEST



COME WHAT
MITE
(Art Agnello,
Entomology,
Geneva)

SEEING
RED

Geneva Predictions:

Roundheaded Appletree Borer

Peak egg laying period roughly: June 25 to July 8.

Peak hatch roughly: July 10-28

Codling Moth

Codling moth development as of July 1: 1st generation adult emergence at 99% and 1st generation egg hatch at 85%.

Lesser Appleworm

2nd LAW flight begins around: July 9.

Obliquebanded Leafroller

Optimum sample date for late instar summer generation OBLR larvae: July 3.

Oriental Fruit Moth

2nd generation OFM first treatment date, if needed: July 5.

Redbanded Leafroller

Peak catch and approximate start of egg hatch: July 11.

Spotted Tentiform Leafminer

Rough guess of when 2nd generation sap-feeding mines begin showing: July 4.



❖❖ The encroaching hot temperatures that we have been seeing with some regularity lately can potentially result in rapid buildups of European red mite populations in various sites. Now that we are entering another mite control season, it doesn't hurt 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.

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IN THIS ISSUE...

INSECTS

- ❖ Orchard Radar Digest
- ❖ European red mite
- ❖ Hudson Valley insect management
- ❖ Cicada-Fest in the Hudson Valley

GENERAL INFO

- ❖ Event announcements

INSECT TRAP CATCHES

UPCOMING PEST EVENTS

Usually, a preventive approach (i.e., without the need to sample) is advised for 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 populations 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:

- Treat different generations with materials of different chemical classes.
- Use nonchemical control tactics where possible (e.g., biological control by encouraging predators).
- Use good miticide stewardship: apply only when necessary; use correct dosages; obtain adequate coverage; and optimize your timing.

Back in the good old 90s, 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: 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

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scaffolds FRUIT JOURNAL
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<http://www.scaffolds.entomology.cornell.edu/index.html>

These numbers are assigned by IRAC (Insecticide Resistance Action Committee), which 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.irc-online.org/>

FIELD NOTES

HUDSON VALLEY INSECT UPDATE

(Peter Jentsch, Entomology, Highland; pjj5@cornell.edu)

Obliquebanded leafroller (OBLR) eggs continue to hatch, with the model predicting 50% hatch. If applications for OBLR management began on the 19th of June for Hudson Valley orchards, then a second application in high-pressure blocks should be made this week, after rains have subsided. Strong showers do have a negative impact on OBLR nymphs as they emerge, but typically not enough to reduce control measures. Managing this insect during the early stage of development has provided the greatest level of control in orchards where perennial OBLR pressure resides. No fewer than two applications of insecticides, effective against the OBLR applied at 14-21 day intervals based on the residue and efficacy of the insecticide, should be applied to blocks in which damage was observed last season. (click <http://ipmguidelines.org/TreeFruits/Chapters/CH11/default-5-8.aspx> for Management Options)

Pear psylla nymphs continue to develop on pear, with eggs and developing 2nd generation nymphs present in untreated trees. We are near-

ing the end of the suckering period, for removal of water sprouts to reduce psylla populations, for this generation. However, recent rains have resulted in retention of succulence, allowing continued sucker removal this week. Delegate used with a penetrating rate of a surfactant will work well against psylla while reducing OBLR larval emergence. (click <http://ipmguidelines.org/TreeFruits/Chapters/CH12/default-3-7.aspx> for Management Options)

San Jose Scale On the 22nd of June, first emergence of SJS crawlers was observed. Crawler emergence from adult female coverings and movement through the tree canopy is nearing completion. Timing of the second contact insecticide application against crawlers should begin this week if adulticides or Movento were not used during the earlier part of the season, or if complete coverage was not achieved. Movento requires two to three weeks for effective uptake to control SJS fruit injury, and should be employed against the next generation if needed. (click <http://ipmguidelines.org/TreeFruits/Chapters/CH11/default-5-8.aspx> for Management Options)

Spotted wing drosophila has been captured in traps over the past 3 weeks in the Hudson Valley. However, the captures have been inconsistent and very low. The use of a yeast and sugar float in apple cider vinegar may have a greater draw to capture low numbers of this insect. Since its first observation on the 10th of June in western Massachusetts, we have observed the SWD in the southern and mid-Hudson Valley on 17th and 21st of June, respectively. Observation in raspberry (Var. Prelude), along wooded edges and within a row of early maturing blackberry, did not show SWD egg laying injury or infestations of fruit when held for 10 days. In two Ulster County bramble plantings in which Malathion 5EC was applied at the highest labeled rate, trap numbers zeroed out the following week. We are recommending that growers intensively monitor fruit for egg laying. If small,

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pin-sized holes are observed in pre-harvested fruit, insecticide programs to manage the SWD should begin. (click http://ipmguidelines.org/BerryCrops/Chapters/CH05/default-2.aspx#_Toc346891906 for Management Options for brambles, blueberry). For educational materials on SWD (click <http://www.fruit.cornell.edu/spottedwing/>) ❖❖

GOOD EATS

CICADA-FEST AT THE HUDSON VALLEY LAB: GRABBING A BITE ON THE FLY
(Dave Rosenberger, Plant Pathology, Highland; dar22@cornell.edu)

❖❖ Late on Friday afternoon, June 21, folks at the Hudson Valley Lab gathered for a special celebration that, due to biological rhythms, can be replicated only a few times during one's career. Brood II of the 17-yr periodical cicada (*Magicicada* sp.) had emerged in all its glory. Woodlands and orchards around the Hudson Valley Lab resounded with their shrill "singing", and airborne cicadas were a common sight in the orchards and parking lots at the lab. The adults have bright red eyes, yellow wing venation, and flying capabilities reminiscent of a rudderless airplane. Anyone working in the orchards during the first few weeks of June had to endure cicadas crash-landing on faces, clothes, and hair throughout the day.

The 17-year cicadas feed on tree roots for 17 years before emerging en masse to mate and lay eggs. The first emergence at the Hudson Valley Lab occurred on May 21 when hard-shelled larvae emerged from holes in the ground, climbed trees, and shed their larval cases. Brood II encompasses three similar-looking species in the Hudson Valley. The mass emergence over the period of several weeks allows the species to survive extensive predation. In preferred forest habitat, cicadas can



emerge at densities of greater than 1.5 million per acre. A great video about periodical cicada can be viewed at: <http://www.kickstarter.com/projects/motionkicker/return-of-the-cicadas> .

The entomology group at the Hudson Valley Lab organized and promoted our Cicada-Fest with signs and rhymes, some coined by English major and Hort tech Joe Whalen, that provided hints of what was to come:

"Show cicadas you're the boss: Try them with a dipping sauce."

"Cicadas drive you nuts, you say? Serve them in a canapé."

"Cicadas getting on your nerves? Why not try them as hors d'oeuvres?"

Preparations for the event got off to an early start in the Truncali household when Dina and her mother awoke soon after 5 AM to the odor of cicadas being sautéed in preparation for the sushi that Taylor brought to the afternoon festivities. By the time the Cicada-Fest got under way, the food table was fully decorated with an abundance of cicada wings and at least five different dishes that included cicadas. Many folks had donned special cicada T-shirts created on-site by Tim Lampasona.

Most of those present tried at least one cicada dish, but several of us thought that the next brood (17 years from now) might have better eating quality and we therefore opted to wait. Facial expressions from some of cicada tasters suggested that waiting another 17 years for the next taste would be

no hardship. Among those who found the texture/ flavor tolerable, the consensus winner for the best dish was de-winged cicadas marinated for several hours in mango-chipotle sauce and then grilled on skewers with chunks of sweet peppers and onions. Only Peter Jentsch enjoyed the cicadas enough to grab them on the fly, hold them by the wings, and then pop them into his mouth directly while retaining and discarding the wings.

Regardless of how they assessed the culinary value of cicadas, all participants thoroughly enjoyed the opportunity to celebrate an event that won't be reproducible for another 17 years. And considering the vast size of the cicada population, we can safely state that our Cicada-Fest had no significant impact on the well-being of this amazing insect species. Incidentally, all of the cicada tasters were back at work on Monday morning with no apparent ill effects from their insectivore experiences. ❖❖



INSECT TRAP CATCHES (Number/Trap/Day)						
Geneva, NY				Highland, NY		
	<u>6/20</u>	<u>6/24</u>	<u>7/1</u>		<u>6/24</u>	<u>7/1</u>
Redbanded leafroller	0.2	0.0	0.1	Redbanded leafroller	2.4	4.6
Spotted tentiform leafminer	1.0	7.3*	13.4	Spotted tentiform leafminer	31.3	25.3
Oriental fruit moth	0.0	0.1	0.1	Oriental fruit moth	1.0	0.2
San Jose scale	0.0	0.0	0.0	Lesser appleworm	0.2	0.4
Codling moth	0.0	0.0	0.4	Codling moth	0.3	0.1
American plum borer	0.0	0.1	0.1	Obliquebanded leafroller	2.7	2.7
Lesser peachtree borer	0.2	0.3	0.1	San Jose scale	0.6	0.0
Pandemis leafroller	0.2	0.8	0.4	Apple maggot	–	0.0
Obliquebanded leafroller	0.0	1.3	0.2			
Dogwood borer	0.2	2.3	3.0			
* first catch						

AUGUST
ASSEMBLYEVENT
ANNOUNCEMENTS

- Persistent NY nematodes for plum curculio biocontrol
- Peach rootstocks
- Rain protection in cherries
- Pear systems and rootstocks
- Apple scab management in a fungicide-resistant orchard

CORNELL FRUIT FIELD DAY

❖❖ Cornell University will host the 2013 Fruit Field Day at the New York State Agricultural Experiment Station in Geneva, NY, on Thursday, August 1, from 8:00 a.m. to 5:00 p.m. The field day will be composed of two concurrent day-long tours, one of tree fruit presentations and another tour of grapes, hops and small fruit presentations. Fruit growers, consultants, and industry personnel are invited to tour field plots and learn about the latest research and extension efforts being carried out by Cornell researchers in Geneva and Ithaca and on commercial farms around the state. The event will focus on all commodities of key importance to New York's \$350 million fruit industry: apples, grapes, cherries, raspberries, strawberries, blueberries and other berry crops, plus hops. During lunch, equipment dealers and representatives from various companies will showcase their latest products and technologies to improve fruit crop production and protection.

The list of presentations will include the following topics:

Tree Fruit Tour

- Apple breeding at Cornell and new varieties in the pipeline
- Precision apple thinning
- Apple mechanization
- Tall Spindle management in years 1-6
- Spray volume for Tall Spindles
- Precision spraying in the orchard
- Fruit russet control on NY1
- CG rootstocks
- Nutrient removal by fruit harvest and maintenance application of fertilizers
- Impacts of glyphosate on apple tree health
- Evaluation of bactericide programs for fire blight management

Berries/Grapes/Hops Tour

- Soil and root factors in improved blueberry productivity
- Mass trapping and exclusion tactics to control Spotted Wing *Drosophila* in organic blueberries
 - Limiting bird damage to small fruit crops
 - SWD trap network in NY
 - Day-neutral strawberries and low tunnel production
 - SWD, a new threat to strawberries and raspberries in NY
 - Enhancing pollination and biological control in strawberries
 - Training systems for Arandell
 - New hops variety trial and pest management trials
 - Biology and control of sour rot in grapes
 - Precision spraying in the vineyard
 - High tunnel raspberry and blackberry production
 - A fixed-spray system for SWD control in high tunnel raspberries

The event will be held on the Experiment Station's Fruit and Vegetable Research Farm South, 1097 County Road No. 4, one mile west of Pre-emption Road in Geneva, NY. Signs will be posted. Attendees will travel by bus to the research plots to hear presentations by researchers on the work being conducted. The cost of registration is \$30 per person (\$40 for walk-ins) for all-day attendance. Lunch will be provided.

Pre-registration is required for the \$30 rate, register online at: <http://is.gd/ffd2013>

For sponsorship and exhibitor information, contact Debbie Breth at 585-798-4265 or dib1@cornell.edu.

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CORNELL UNIVERSITY STORAGE WORKSHOP

This year's workshop, slated for August 6 in Ithaca, will feature an international, national and statewide cast. Our guest speakers include Dr. Angelo Zanella, who heads the post-harvest research group at Laimburg Agriculture Research Centre in Italy, and who will be presenting their work on DCA and ILOS, as well as their experiences with DPA. Other presentations will include Honeycrisp, and Empire and Gala browning by Jim Mattheis (USDA, Washington), Jennifer DeEll (Ontario Ministry of Agriculture and Food, Canada), as well as the Cornell team of Chris Watkins and David Rosenberger. Industry presentations include DECCO, PACE and Storage Control Systems. Registration materials will be available shortly.



UPCOMING PEST EVENTS

	<u>43°F</u>	<u>50°F</u>
Current DD accumulations (Geneva 1/1–7/1/13):	1391	902
(Geneva 1/1–7/1/2012):	1765	1161
(Geneva "Normal"):	1432	893
(Geneva 1/1–7/8 predicted):	1613	1074
(Highland 1/1–7/1/2013):	1623	1052

<u>Coming Events:</u>	<u>Ranges (Normal ±StDev):</u>	
Obliquebanded leafroller summer larvae hatch	1038–1460	625–957
Lesser appleworm 1st flight subsides	990–1466	604–932
Apple maggot 1st catch	1243–1663	791–1067
American plum borer 1st flight subsides	1199–1435	745–923
Comstock mealybug 1st adult catch	1308–1554	809–1015
Comstock mealybug 1st flight peak	1505–1731	931–1143
Redbanded leafroller 2nd flight begins	1252–1580	771–1031
Dogwood borer flight peak	1460–1844	914–1200
Lesser appleworm 2nd flight begins	1418–2002	918–1326
Pandemis leafroller flight subsides	1419–1659	884–1066
Spotted tentiform leafminer 2nd flight peak	1377–1791	860–1192

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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