SCAFFOLDS Fruit Journal, Geneva, NY
Volume 25, No. 14
Update on Pest Management and Crop Development
June 21, 2016

COMING EVENTS

	43°F	50°F
Current DD* accumulations		
(Geneva 1/1-6/21):	1144.3	688.4
(Geneva 1/1-6/21/2015):	1146.6	739.6
(Geneva "Normal"):	1183.6	726.0
(Geneva 1/1-6/27, predicted):	1302.8	804.9
(Highland 1/1-6/20):	1508.6	914.4

Upcoming Pest Events – Ranges (Normal +/- Std Dev):

American plum borer		
1st flight subsides.....	1200-1488	745-967
Codling moth 1st flight subsides.	1254-1824	999-204
Comstock mealybug		
1st adult catch.....	1308-1554	809-1015
Lesser appleworm		
1st flight subsides.....	989-1515	604-974
Obliquebanded leafroller		
summer larvae hatch	1038-1460	625-957
Oriental fruit moth		
2nd flight start.....	1264-1500	783-973

Peachtree borer 1st catch.....799-1331 462-824
Redbanded leafroller
2nd flight start.....1219-1567 752-1020
White apple leafhopper
1st gen adults peak 1162-1414 765-987
*[all DDs Baskerville-Emin, B.E.]

Pest Focus
Geneva: 1st trap catch of Peachtree Borer 6/16.
1st trap catch of Redbanded Leafroller 2nd flight today, 6/21.

Insect model predictions for Highland[H]/Geneva[G]
[Source: NEWA Apple Insect Models, http://newa.cornell.edu/index.php?page=apple-insects]

Obliquebanded Leafroller 25% hatch @450 DD43; 50% hatch @630 DD43; 90% hatch @810 DD43 (currently @ 750[H] / 466[G]).

TRAP CATCHES
Geneva (Number/trap)

	6/9	6/13	6/16	6/21
Redbanded Leafroller	0.0	0.0	0.0	12.5*
Spotted Tentiform Leafminer	0.0	1.5	9.0	19.5

Oriental Fruit Moth	0.0	0.0	0.0	0.0
Lesser Apple Worm	0.0	0.5	2.0	1.0
San Jose Scale	0.5	0.0	0.0	0.0
Codling Moth	0.0	1.0	2.0	7.5
American Plum Borer	0.5	0.0	0.0	0.0
Lesser Peachtree Borer	0.5	4.5	3.0	3.5
Obliquebanded Leafroller	1.0	2.0	3.0	27.0
Pandemis Leafroller	2.0	31.0	1.5	8.5
Dogwood Borer	0.5	-	1.5	5.0
Peachtree Borer	-	-	1.0*	7.0

Highland (Peter Jentsch)

	5/31	6/6	6/13	6/20
Redbanded Leafroller	1.0	0.0	0.5	8.5
Spotted Tentiform Leafminer	1.5	60.0	96.0	327.0
Oriental Fruit Moth	0.5	1.0	0.0	0.5
Lesser Appleworm	5.0	4.0	1.0	7.5
San Jose Scale	32.0	0.0	0.0	0.5
Codling Moth	71.0	44.5	35.5	48.5
Obliquebanded Leafroller	4.5	21.0	41.5	62.5
Dogwood Borer	1.0*	2.0	1.1	0.0
Brown Marmorated Stink Bug	0.0	0.0	0.0	0.0

* 1st catch

ORCHARD RADAR DIGEST

[Box Text: HOT WINGS]

Geneva Predictions:

Roundheaded Appletree Borer

RAB Peak egglaying period roughly: June 24 to July 7.

Peak RAB egg hatch roughly: July 9-27.

Dogwood Borer

First DWB egg hatch roughly: June 22.

Codling Moth

Codling moth development as of June 20: 1st generation adult emergence at 91% and 1st generation egg hatch at 54%.

Obliquebanded Leafroller

Early egg hatch and optimum date for initial application of insecticide effective against OBLR (with follow-up applications as needed): June 23.

Oriental Fruit Moth

2nd generation OFM flight begins around: June 27.

Redbanded Leafroller

2nd RBLR flight begins around June 28.

Spotted Tentiform Leafminer

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

[Section: INSECTS]

SUMMER SUBLET

(Art Agnello, Entomology, Geneva; ama4@cornell.edu)
[Box Text: AIR B&BUG]

Obliquebanded Leafroller

Assuming a biofix (1st adult catch) of OBLR this year from about May 23 (Highland) to 5/31 (Geneva) to 6/13 (Williamson, Sodus & Wolcott), sites around the state have accumulated a total of anywhere from 500-750 DD (base 43°F) in the most advanced sites, with perhaps 175-270 DD in later northerly regions. First egg hatch is generally expected at about 360 DD, which has already passed in Highland and Geneva, and should occur sometime this week in Sodus and somewhat later in the Champlain Valley. The 630 DD point in the insect's development roughly corresponds to 50% egg hatch, and at 720 DD, the earliest emerging larvae have reached the middle instars that are large enough to start doing noticeable damage to foliar terminals and, eventually, the young fruits. This is also the earliest point at which visual inspection for the larvae is practical, so sampling for evidence of a treatable OBLR infestation would be recommended at that time in orchards where pressure has not been high enough to justify a preventive spray.

Guidelines for sampling OBLR terminal infestations can be found on p. 71 in the Recommends, using a 3% action

threshold that would lead to a recommended spray of an effective leafroller material. Delegate, Belt, Altacor, Proclaim and Exirel are our preferred choices in most cases; Rimon, Intrepid, a B.t. material or a pyrethroid are also options, depending on block history and previous spray efficacy against specific populations. If the average percentage of terminals infested with live larvae is less than 3%, no treatment is required right away, but another sample should be taken three to five days (100 DD) later, to be sure populations were not underestimated.

Aphids, Green & Otherwise

Although small numbers of green aphids (Spirea aphid, *Aphis spiraecola,* and Apple aphid, *Aphis pomi*) may have been present on trees early in the season, populations have been increasing regularly as the summer weather patterns gradually become established. Both species are common during the summer in most N.Y. orchards, although no extensive surveys have been done to compare their relative abundance in different production areas throughout the season. It's generally assumed that infestations in our area are mostly Spirea aphid.

Nymphs and adults suck sap from growing terminals and water sprouts. High populations cause leaves to curl and may stunt shoot growth on young trees. Aphids excrete

large amounts of honeydew, which collects on fruit and foliage. Sooty mold fungi that develop on honeydew cause the fruit to turn black, reducing its quality.

Aphids should be sampled several times throughout this season starting now. Inspect 10 rapidly growing terminals from each of 5 trees throughout the orchard, noting the percentage of infested terminals, including rosy aphid-infestations, since they tend to affect the foliage similarly to the green species at this time of the year. No formal studies have been done to develop an economic threshold for aphids in N.Y. orchards. Currently, treatment is recommended if 30% of the terminals are infested with either species of aphid, or at 50% terminal infestation and less than 20% of the terminals with predators (below). An alternative threshold is given as 10% of the fruits exhibiting either aphids or honeydew.

The larvae of syrphid (hoverflies) and cecidomyiid flies (midges) prey on aphids throughout the summer. These predators complete about three generations during the summer. Most insecticides are somewhat toxic to these two predators, and they usually cannot build up sufficient numbers to control aphids adequately in regularly sprayed orchards. Check Tables 7.1.1 (p. 63) and 7.1.2 (p. 65) in the Recommends for ratings of efficacy and impact on

beneficials, respectively, for common spray materials. Both aphid species are resistant to most organophosphates, but materials in other chemical classes that control these pests effectively include: Actara, Admire, Asana, Assail, Aza-Direct, Beleaf, Danitol, Lannate, Movento, Proaxis, Pyrenone, Vydate and Warrior, as well as pre-mixes containing some of the same a.i.s

Woolly Apple Aphid

WAA colonizes both aboveground parts of the apple tree and the roots and commonly overwinters on the roots. In the spring, nymphs crawl up on apple trees from the roots to initiate aerial colonies. Colonies initially build up on the inside of the canopy on sites such as wounds or pruning scars and later become numerous in the outer portion of the tree canopy, usually during late July to early August, but you may already begin to notice these aerial colonies in high pressure orchards in the region. Refer to the May 31 issue of Scaffolds for an overview of some control recommendations.

Potato leafhopper

PLH is generally a more serious problem in the Hudson Valley than in western New York or the Champlain Valley; however, healthy populations can be found in WNY as well this season. Refer to the June 13 issue of Scaffolds for an

overview of its biology and some control recommendations.

Japanese Beetle

This perennial pest overwinters as a partially grown grub in the soil below the frost line. In the spring the grub resumes feeding, primarily on the roots of grasses, and then pupates near the soil surface. Adults normally begin to emerge during the first week of July in upstate N.Y. The adults fly to any of 300 species of trees and shrubs to feed; upon emergence, they usually feed on the foliage and flowers of low-growing plants such as roses, grapes, and shrubs, and later on tree foliage. On tree leaves, beetles devour the tissue between the veins, leaving a lacelike skeleton. Severely injured leaves turn brown and often drop. Adults are most active during the warmest parts of the day and prefer to feed on plants that are fully exposed to the sun.

Although damage to peaches is most commonly noted in our area, the fruits of apple, cherry, peach and plum trees may also be attacked, all of which have been suffering increasing damage from these insects in recent years. Fruits that mature before the beetles are abundant, such as cherries, may escape injury. Ripening or diseased fruit is particularly attractive to the beetles. Pheromone traps are

available and can be hung in the orchard in early July to detect the beetles' presence; these products are generally NOT effective at trapping out the beetles. Fruit and foliage may be protected from damage by spraying an insecticide such as Assail, Sevin, Endigo or Voliam Xpress (in apple) or Admire, Assail, Sevin, Endigo, Leverage or Voliam Xpress (in cherries or peaches) when the first beetles appear.

(Information adapted from: Johnson, W.T. & H.H. Lyon. 1988. Insects that feed on trees and shrubs. Cornell Univ. Press.; and Howitt, A.H. 1993. Common tree fruit pests. Mich. State. Univ. Ext. NCR 63.)

COME WHAT MITE

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

[Box Text: ACARI'D AWAY]

The recent and anticipated blasts of heat moving through our region this month are providing sufficient heat (and food) to promote buildups of European red mite populations in various sites. Now that we are entering another mite control season, it may be useful to again 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.

Usually, a preventive approach (i.e., without the need to sample) is advised for the 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, Nealta, 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 population 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 using selective insecticides -- i.e.,

avoiding pyrethroids and carbamates -- to encourage predators).

- Use good miticide stewardship, apply only when necessary, use correct dosages, obtain adequate coverage, and optimize your timing.

Not so long ago, 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/Proclaim: 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 and [25] Nealta: METI (mitochondrial electron transport inhibitor), Site II
[21] Nexter/Portal: METI (mitochondrial electron transport inhibitor), Site I
[23] Envidor: lipid biosynthesis inhibitor

These numbers, which are listed just before the product names in the Tree Fruit Guidelines spray tables, are assigned by IRAC (Insecticide Resistance Action Committee). This 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.irac-online.org/

[Section: GENERAL INFO]

EVENT ANNOUNCEMENTS
[Box text: FIELD CRED]

The Cornell Fruit Field Day will be held in Geneva on Wednesday, July 20. This event, being organized by Cornell University, the NYS Agricultural 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 your lunch option.
To participate as a sponsor, see the website page or contact Shelly Cowles (315-787-2274; mw69@cornell.edu).

NOTE: This year's IFTA (International Fruit Tree Association) Summer Study Tour is taking place in western NY and will focus on the Cornell Fruit Field Day, with complementary tours on the day before and after (July 19, Orleans Co. and July 21, Wayne Co.) For more information on this tour, see their website: http://www.ifruittree.org

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.

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 p.m. Monday to:

Scaffolds Fruit Journal
Editor: A. Agnello
Dept. of Entomology, NYSAES
630 W. North St.
Geneva, NY 14456-1371
Phone: 315-787-2341 FAX: 315-787-2326
E-mail: ama4@cornell.edu
Online at
<http://www.scaffolds.entomology.cornell.edu/index.html>