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Update on Pest Management and Crop Development

FRUIT JOURNAL

June 29, 2009 VOLUME 18, No. 15 Geneva, NY

INSECTS

ANOTHER ROUND?

ORCHARD RADAR DIGEST (Art Agnello Entomology Geneva)

Redbanded Leafroller

2nd RBLR flight begins around July 6.

Spotted Tentiform Leafminer

Rough guess of when 2nd generation sap-feeding mines begin showing: July 8.

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❖❖ Geneva Predictions:

Roundheaded Appletree Borer (RAB) and Dogwood Borer (DWB)

RAB peak egglaying period roughly: June 28 to July 14.

First DWB egg hatch roughly: July 3.

Codling Moth

Codling Moth development as of June 29: 1st generation adult emergence at 96% and 1st generation egg hatch at 70%.

Obliquebanded Leafroller

Where waiting to sample late instar OBLR larvae is not an option (= where OBLR is known to be a problem, and will be managed with insecticide against young larvae):

Early egg hatch and optimum date for initial application of B.t., Intrepid, Proclaim, SpinTor, Delegate or other insecticide with comparable efficacy against OBLR (with follow-up applications as needed): June 27.

Where waiting to sample late instar OBLR larvae to determine need for treatment is an option, or to check on results from earlier sprays:

Optimum sample date for late instar summer generation OBLR larvae: July 8.

Oriental Fruit Moth

2nd generation OFM flight begins around: July 3.

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MODEL BUILDING

Obliquebanded Leafroller (% estimated egg hatch in DD base 43°F after biofix: 25% hatch - 450 DD; 50% hatch - 630 DD:

Location	Biofix	DD (as of 6/28)
Albion	6/11	423
Appleton-S	6/15	327
Clifton Park	6/18	273
Geneva	6/11 (estimated)	418
Highland	5/31	635
Lafayette	6/23	147
Lyndonville	6/17	302
Sodus	6/8	445
Walworth	6/15	325
Waterport	6/17	309
Williamson	6/15	322

[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]

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PEST FOCUS

Geneva:
1st **peachtree borer** trap catch 6/25.

BIG BANG

LIGHTING THE FIREWORKS
(Art Agnello and Harvey Reissig, Entomology, Geneva)

Obliquebanded Leafroller

❖❖ Assuming a biofix (1st adult catch) of OBLR between about June 11–15, many sites have accumulated a total of 300–400 DD (base 43°F) as of this morning, which means that we will soon reach the 600 DD point in the insect's development that roughly corresponds to 50% egg hatch. This is the period during which the earliest emerging larvae begin to reach 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 is recommended now in orchards where pressure has not been high enough to justify a preventive spray already.

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 ma-

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terial. Delegate (or Spintor) and Proclaim are our preferred choices in most cases; 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 at this time, but another sample should be taken three to five days (100 DD) later, to be sure populations were not underestimated.

Tapping the Sap

A number of orchards have continued to show infestations of foliar pests that have already been troublesome since early postbloom, some of which tend to increase in response to the "flush growth" that is caused by the episodic and generous rainfall that we have experienced this season. Green aphids are quite plentiful in some orchards, and even rosy apple aphid colonies have continued to proliferate; potato leafhoppers were very early in general and can be (or already have been) seen statewide. No doubt growers in all our regions would do well to keep an eye on local populations.

Green Aphids

Although small numbers of these 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. Record 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 5 (p. 59) and 12 (p. 65) in the Recommends for toxicity ratings of common spray materials. Both aphid species are resistant to most organophosphates, but materials in other chemical classes that control these pests effectively include: Asana, Assail, Aza-Direct, Beleaf, Calypso, Danitol, Lannate, Leverage, M-Pede, Proaxis, Provado, Pyrenone, Thionex, Vydate and Warrior.

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. Refer to the June 15 issue of Scaffolds for an overview of its biology and some control recommendations.

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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 are being seen in WNY as well this season. Refer to the May 26 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 begin to emerge during the first week of July in upstate N.Y., and we have no reason to believe that they won't be right on schedule once again this year. 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, Calypso, or Sevin (in apple) or Assail, Leverage, or Provado (in cherries; add Sevin to the list for 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.)

ONE STEP AHEAD

HUDSON VALLEY INSECT PEST MANAGEMENT UPDATE
(Peter Jentsch, Entomology, Highland)

Apple Maggot (AM)

❖❖ Flight of AM continued at relatively low numbers last week in Highland. Adult fly captures remain below threshold and predicted intermittent rains will provide ample soil moisture for continued emergence. Assail, Calypso organophosphates, carbamates, pyrethroids used for OFM management will reduce the early AM adult populations.

Oriental Fruit moth (OFM)

We have exceeded trap threshold of the 2nd generation OFM adults in Highland with more than 10 moths/trap/week captured. The first spray for 2nd brood in apple is warranted only if a threshold is exceeded. About 10% of the eggs laid by this generation have hatched. In orchards that have a history of previous fruit infestation from this pest, populations may be resistant to organophosphates or pyrethroids. In these instances, Assail, Avaunt, Calypso and Intrepid may be used for resistant populations. These materials are timed earlier then

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the organophosphates carbamates, pyrethroids and Avaunt, with applications to begin early this week. If trap thresholds are not exceeded at the beginning of 2nd flight, a single spray for this generation can be applied the following week. The management timing for OFM this season will coincide with the 2nd application for OBLR. Delegate and Proclaim will have excellent efficacy against both OFM and OBLR populations, followed by the pyrethroids, Leverage, Bts, Intrepid, and Lannate.

Obliquebanded Leafroller (OBLR)

We are continuing to capture OBLR adult moths; however, trap captures for OBLR are not a good indicator of leafroller abundance or potential for larval damage to fruit. Model predictions used to determine the hatch of OBLR eggs forecast that we are beyond 50% egg hatch. The 2nd–3rd instar larvae of the early hatching eggs are now present in the lower Hudson Valley and scouting for larvae should be conducted at this time. Opening fruit clusters, looking for foliage webbed to fruit, and examining terminal tips with 'leaf rolling' for live larvae will help determine if insecticide applications are necessary.

Predictions forecasting 90% hatch of the eggs to hatch by 810 DD will occur during the end of the 1st through 2nd week of July. Given the extended period of OBLR hatch, multiple applications of insecticides will most likely be needed in many Hudson Valley orchards that have experienced perennial problems managing this insect. Given the intermittent rainfall we've experienced, reductions in residue have occurred. All materials show reduced performance after 1–2 inches of rain or when residues age seven days prior to a rain event. Since we will see hatch of OBLR larvae into the second week of July, it will be important to step up scouting intervals for this insect. Suggested action threshold is 3% infested clusters and terminals.

Apply subsequent applications with rain forecasts in mind. Addition of a penetrating surfactant will improve efficacy of Proclaim, SpinTor and Delegate. 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.

Fruit losses of 10–20% attributed to OBLR were all too common in commercial orchards over the past 10 years. A number of management errors may result in fruit injury. These include overcropping, alternate row middle applications leading to poor coverage, and late timing. However, the loss of Lorsban for mid-season management, and the development of insecticide resistance in populations of OBLR to the OP, Guthion, played a big part in the loss in control of this insect. Given the history of insecticide resistance throughout the Hudson Valley, it is now critical that alternating IRAC classes of insecticides be made for each generation of OBLR larva. For example, if Bt (IRAC class 11) was used for the overwintering generation at petal fall, then a different IRAC class should be used during the summer generation. However, multiple applications of the same material can be used for the same generation. So if you choose to use Delegate at first hatch of the summer generation, then subsequent application of Delegate at 14–21 day intervals can be used to manage the OBLR through to the completion of hatch.❖❖

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	6/22	6/25	6/29
Redbanded leafroller	–	0.2	0.4
Spotted tentiform leafminer	4.0	32.5*	18.6
Oriental fruit moth	0.0	0.0	0.0
Lesser appleworm	0.7	0.3	0.6
Codling moth	0.0	0.0	0.1
San Jose scale	–	0.0	0.0
American plum borer	0.0	0.2	0.1
Lesser peachtree borer	0.0	0.7	1.0
Peachtree borer	0.0	0.2*	0.3
Pandemis leafroller	0.3	0.5	0.3
Obliquebanded leafroller	0.0	0.3*	0.0
Dogwood borer	–	0.8	–

Highland, NY

	6/22	6/29
Redbanded leafroller	1.4	6.5
Spotted tentiform leafminer	145	253.4
Oriental fruit moth	0.1	1.1
Lesser appleworm	8.6	9.8
Codling moth	1.8	1.6
Lesser peachtree borer	0.0	0.2
Obliquebanded leafroller	1.4	4.9
Dogwood borer	0.1	0.7
Peachtree borer	0.0	0.4
Tufted apple budmoth	0.0	2.3*
Variegated leafroller	0.0	0.5*
Apple maggot	0.1*	0.1

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–6/29/09):	1293	777
(Geneva 1/1–6/29/2008):	1416	888
(Geneva "Normal"):	1350	856
(Geneva 1/1–7/6 Predicted):	1454	889
(Highland 3/1–6/29/09):	1453	880

Coming Events:	Ranges (Normal ±StDev):	
Lesser appleworm 1st flight subsides	975-1453	595-927
Obliquebanded leafroller summer larvae hatch	1038–1460	625–957
American plum borer 1st flight subsides	1225–1413	769–907
Apple maggot 1st catch	1228–1620	784–1034
Comstock mealybug 1st adult catch	1308–1554	809–1015
Oriental fruit moth 2nd flight begins	1275–1489	785–969
Redbanded leafroller 2nd flight begins	1250–1586	770–1036

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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