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Update on Pest Management and Crop Development

FRUIT JOURNAL

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INSECTS

BUZZ OFF

ORCHARD RADAR DIGEST

Geneva Predictions:

Roundheaded Appletree Borer

RAB adult emergence begins: May 31; Peak emergence: June 15.

RAB egglaying begins: June 10. Peak egglaying period roughly: June 29 to July 13.

Codling Moth

1st generation 3% CM egg hatch: June 10 (= target date for first spray where multiple sprays needed to control 1st generation CM).

1st generation 20% CM egg hatch: June 17 (= target date where one spray needed to control 1st generation codling moth).

Lesser Appleworm

1st LAW flight, 1st trap catch: May 10.

Mullein Plant Bug

Expected 50% egg hatch date: May 15, which is 9 days before rough estimate of Red Delicious petal fall date.

The most accurate time for limb tapping counts, but possibly after MPB damage has occurred, is when 90% of eggs have hatched.

90% egg hatch date: May 20.

Obliquebanded Leafroller

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

Oriental Fruit Moth

1st generation second treatment date, if needed: May 28.

Redbanded Leafroller

Peak trap catch and approximate start of egg hatch: May 2.

San Jose Scale

First adult SJS caught on trap: May 18.

Spotted Tentiform Leafminer

1st STLM flight, peak trap catch: May 8.

1st generation sapfeeding mines start showing: May 22.

Optimum sample date is around May 23, when a larger portion of the mines have become detectable.

White Apple Leafhopper

1st generation WALH found on apple foliage: May 14.

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IN THIS ISSUE...

A HOST OF THRIPS

TROUBLING THRIPS: HUDSON VALLEY SWEET CHERRY DAMAGE

(Peter Jentsch, Entomology; and Steve Hoying, Horticultural Sciences, Highland)

❖❖ On the 2nd of May, temperatures dipped to 27°F during the early morning hours. As we were determining the extent of frost damage to sweet cherry flower clusters, pear thrips, *Taeniothrips inconsequens* (Uzel), which are in the order Thysanoptera, were found within the cherry blossoms.

They characteristically arrive just before or during the opening of fruit buds, which is late April in Hudson Valley apple and pear blocks. They enter the bud, or start feeding on the bud tip and gradually work themselves into the flowering parts. When populations are low, they are not considered to be economically damaging. This spring, the mild winter and dry spring increased their rate of success, allowing numbers early in the season to become relatively high. ("Thrips", by the way, is the term used both for both singular and plural forms.) The pear thrips has many hosts, and has been found feeding on a number of plants including apple, apricot, beech, cherry, currant grape, sugar and red maple, peach, pear, plum, poplar, prune, shadberry, and willow.

Damage was observed throughout four varieties we have at the lab that had been grown using organic insect and disease pest management (Attica, Benton, Regina and Sweetheart). In most commercial orchards, thrips numbers are low, as pre-bloom applications of most insecticides significantly reduce populations and subsequently the forms of damage we observed this season. However, if pre-bloom insecticides were not applied, it may be prudent to scout for both adults and damage to flower clusters and developing fruitlets.

Thrips feeding on fruit trees occurs on succulent flowering parts, giving the blossom buds a scorched appearance. This type of damage often causes them to drop prematurely. If misdiagnosed in a season such as this, one might assume it was due to frost injury or poor set.

Thrips adults were seen feeding on tissue around the very small, developing fruit. The damage later appears as latitudinal brown streaks (Image 1). After closer examination, we found eggs

Image 1. Thrips adults feeding damage to developing cherry fruit (2 May, 2008).

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

Editors: A. Agnello, D. Kain

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Image 2. Pear thrips egg deposited beneath the skin of the developing fruit (2 May, 2008).

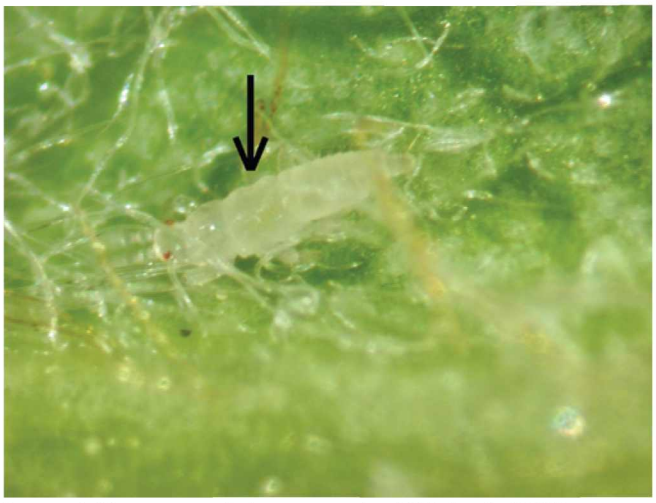

Image 3. Young pear thrips on pear leaf (28 April, 2008).

deposited beneath the skin of the fruit (Image 2). Development of these eggs will be completed in about four weeks. Young pear thrips that emerge from plant tissue are quite small, less than 1/20th of an inch, and translucent white with red eyes (Image 3). Mouthparts consist of a pair of stylets for puncturing plant tissue, and a rasp-like surface used for lacerating the cuticle and feeding on the juices. Larval feeding continues for roughly 3 weeks on the surface of the fruit and foliage, increasing the damage already caused by earlier feeding of the adults. Nymphs will drop to the ground in June where they enter a diapause state until the fall.

Pre-bloom oil treatments prior to adult infestation and oviposition in April can significantly reduce damage to pear, apple and cherry caused by pear thrips. Insecticides used to reduce the plant bug complex on stone fruit also will control pear thrips.❖❖

PEST FOCUS

Geneva:
Oriental fruit moth 1st trap catch 4/24.

Highland:
Pear psylla nymphs above threshold on Bartlett pear **Pear thrips** ovipositing into cherry fruit. **European apple sawfly** adults observed in traps and apple blossoms and **tarnished plant bug** and **oblique-banded leafroller** larvae observed feeding on apple.

INTERNAL MEMO

WORMS ON THE RUN
(Harvey Reissig and Dave Combs, Entomology, Geneva)

❖❖ To give you a preview of the effectiveness of one of the new insecticides from DuPont expected to be federally labeled this year against internal feeding worms, here is a report of a 2007 Field Evaluation of Altacor 35WG in a Commercial Orchard Against the Internal Lepidoptera Complex:

Sprays were applied by the grower in a Wayne Co. apple orchard with a history of internal worm pressure, using approximately 100 gpa over the entire growing season. Altacor 35WG was applied against the internal worm complex (a combination of codling moth, oriental fruit moth and lesser appleworm) at three different rates (2.0 oz/acre, 2.5 o/acre, 3.0 oz/acre), several times throughout the season. This was compared with a standard treatment within the same block. Plot 1 had three applications of Altacor 35WG at 2.0 oz/acre and a fourth at 3.0 oz/acre, while plots 2 and 3 had three applications at 2.5 and 3.0 oz/acre respectively. Plot 2 then received a fourth application against internal worms of Calypso 4F (5.0 oz/acre), and plot 3 received an application of Imidan 70WP (2.4 lbs/acre). These materials were used in plots 2 and 3 as to not exceed the limit of 9.0 oz/A of Altacor 35WG allowed by the experimental use permit.

The grower standard treatment received 3 applications of Calypso 4F (5.0 oz/acre), 1 application of Dipel DF (1 lb/acre) and one application of Imidan 70WP (2.4 lbs/acre). All plots were treated on the same dates: 13 Jun, 12 Jul, 27 Jul, 10 Aug and 24 Aug. All treatments received an application of Assail 30SC (6.0 oz/acre) on 24 Aug. (See Table 1 for all insecticide application timings, rates and materials.) Fruit samples were taken on the tree several times during the season (5 Jul, 24 Jul, 8 Aug) to estimate populations and check the efficacy of the materials by inspecting 1000 fruit per test plot (100 fruit on each of 10 trees). Final harvest data were taken on 10 Sep by collecting 1000 fruit/plot and evaluating them for both internal worm damage and obliquebanded leafroller damage.

The 3.0 oz/acre rate of Altacor 35WG gave the best control throughout the season, followed closely by the 2.5 oz/acre rate (Table 2). The 2.0 oz/A rate of Altacor 35WG had damage levels similar to those found in the grower standard. An increase in damage in all treatments on 24 Jul could have been the result of a long interval between applications. The 8 Aug sample indicated decreased fruit damage in all of the treatments, probably caused by the premature drop of some infested fruits. Final harvest evaluations were similar to the findings of the 8 Aug sample.

At harvest (Table 2), the two highest rates of Altacor 35WG gave excellent control; however, the 2.0 oz/acre rate was similar to the grower standard for internal worm entries. A second category of damage known as a 'sting' was also recorded. This indicates an attempted entry by an internal feeding pest that leaves a scar no deeper than 1/4". All plots had very low levels of this type of damage, and the 3.0 oz/acre rate of Altacor 35WG did not have any stings.

Obliquebanded leafroller damage was assessed using the USDA rating system: Extra Fancy (between 0–3 mm), Fancy (between 3–5 mm), Utility (between 5–7 mm) and Cull (>7 mm). Again, all three rates of the Altacor 35WG outperformed the grower standard, even though the sprays were not timed against this pest (Table 3). Even the lowest rate of Altacor 35WG had OBLR damage levels almost 3 times lower than those found in the grower standard. Although the data show that this material has good efficacy against OBLR, growers could probably obtain acceptable control using fewer well-timed sprays against this pest.❖❖

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Table 1. List of treatments in Altacor test orchard

Treatment	Application Date	Material and Rate
Entire Orchard	7 May	Lorsban 4EC (3.0 pt/A)
Entire Orchard	21 May	Imidan 70WP (2.0 lb/A) Dipel DF (1.0 lb/A)
Entire Orchard	31 May	Sevin XLR (3.0 pt/A)
Plot 1	13 Jun	Altacor 35WG (2.0 oz/A)
Plot 2	13 Jun	Altacor 35WG (2.5 oz/A)
Plot 3	13 Jun	Altacor 35WG (3.0 oz/A)
Grower Std	13 Jun	Calypso 4F (5.0 oz/A)
Plot 1	12 Jul	Altacor 35WG (2.0 oz/A)
Plot 2	12 Jul	Altacor 35WG (2.5 oz/A)
Plot 3	12 Jul	Altacor 35WG (3.0 oz/A)
Grower Std	12 Jul	Calypso 4F (5.0 oz/A) Dipel DF (1.0 lb/A)
Plot 1	27 Jul	Altacor 35WG (2.0 oz/A)
Plot 2	27 Jul	Altacor 35WG (2.5 oz/A)
Plot 3	27 Jul	Altacor 35WG (3.0 oz/A)
Grower Std	27 Jul	Calypso 4F (5.0 oz/A) Dipel DF (1.0 lb/A)
Plot 1	10 Aug	Altacor 35WG (3.0 oz/A)
Plot 2	10 Aug	Calypso 4F (5.0 oz/A)
Plot 3	10 Aug	Imidan 70WP (2.4 lb/A)
Grower Std	10 Aug	Imidan 70WP (2.0 lb/A)
Entire Orchard	24 Aug	Assail 30SC (6.0 oz/A)

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Table 2. On-Tree and Harvest Fruit Damage Evaluations

	% Fruit damage caused by internal worms				
Treatment	5 Jul, on-tree	24 Jul, on-tree	8 Aug, on-tree	Harvest, Stings	Harvest, Entries
Altacor 2.0oz/A	2.2	5.3	3.5	0.7	2.2
Altacor 2.5oz/A	0.6	3.1	1.9	0.2	1.3
Altacor 3.0oz/A	0.4	1.9	1.3	0.0	1.0
Grower Standard	0.7	7.3	3.3	0.7	3.3

Table 3. Harvest Evaluation of Obliquebanded Leafroller Damage

	USDA Grade caused by OBLR feeding				
Treatment	XFancy	Fancy	Utility	Cull	Total
Altacor 2.0 oz/A	1.4	1.1	0.4	0.0	2.9
Altacor 2.5 oz/A	1.1	1.6	0.4	0.3	3.5
Altacor 3.0 oz/A	1.4	0.9	0.1	0.4	2.8
Grower Std	2.3	4.1	2.1	2.4	10.9

CHEM NEWS

A BIGGER HAMMER

PRODUCT REGISTRATION UPDATE, IV
(Art Agnello, Entomology, Geneva)

Bayer

❖❖ **Leverage 2.7** (1.6EC; EPA Reg. No. 264-770) is a newly registered insecticide labeled in NY against a wide range of pests of pome fruit and stone fruit. It is a combined formulation of imidacloprid, the a.i. found in Provado, plus the pyrethroid cyfluthrin, the a.i. in Baythroid. The pome fruit label includes internal worms and leafrollers, aphids (except woolly apple aphid), apple maggot (combined with a sticker), sawfly, plum curculio, San Jose scale crawlers, and plant bugs; the stone fruit label adds Japanese beetle, American plum borer, cherry fruit fly, among others. This product may not be applied prebloom. ❖❖

PHENOLOGIES

Geneva:

	5/5	5/12 (Predicted)
Apple(McIntosh):	50% bloom	petal fall
Apple(Red Delicious):	late pink	bloom
Apple(Empire):	25% bloom	petal fall
Pear(Bartlett):	bloom	petal fall
Sweet cherry(Hedelfingen):	petal fall	fruit set
Tart cherry(Montmorency):	50% petal fall	petal fall
Plum (Stanley):	90% petal fall	fruit set
Peach:	50% petal fall	petal fall–fruit set

Highland:
Apple (Ginger Gold): 80% petal fall
Apple (McIntosh): bloom
Apple (Red Delicious): bloom
Apple (Golden Delicious): 80% bloom
Pear (Bartlett): petal fall
Pear (Bosc): late bloom
Peach (early): 80% petal fall, shucks on
Peach (late): petal fall, shucks on
Plum (Italian): late bloom
Plum (Stanley): petal fall
Sweet cherry: bloom–50% petal fall–petal fall, shucks on

INSECT TRAP CATCHES
(Number/Trap/Day)

Geneva, NY

	4/28	5/1	5/5
Green fruitworm	0.0	0.0	0.0
Redbanded leafroller	7.5	0.5	15.8
Spotted tentiform leafminer	9.0	1.2	3.3
Oriental fruit moth	0.5	0.2	0.6
American plum borer	–	0.0	0.0

Highland, NY

	4/28	5/5
Green fruitworm	0.0	0.0
Redbanded leafroller	6.1	1.0
Spotted tentiform leafminer	53.4	10.9
Oriental fruit moth	4.4	2.5
Codling moth	0.0	0.0

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–5/5/08):	368	196
(Geneva 1/1–5/5/2007):	261	115
(Geneva "Normal"):	319	166
(Geneva 1/1–5/12 Predicted):	458	246
(Highland 3/1–5/5/08):	352	160

Coming Events:	Ranges (Normal ±StDev):	
Redbanded leafroller 1st flight peak	229–377	103–191
Spotted tentiform leafminer 1st flight peak	257–407	115–207
Spotted tentiform leafminer sap-feeders present	343–601	165–317
Comstock mealybug 1st gen. crawlers in pear buds	215–441	80–254
European red mite egg hatch complete	368–470	182–280
Oriental fruit moth 1st flight peak	332–538	161–287
Rose leafhopper nymphs on multiflora rose	239–397	96–198
American plum borer 1st catch	331–525	143–279
Lesser appleworm 1st catch	257–573	116–304
Codling moth 1st catch	389–609	191–335
Green fruitworm flight subsides	233–453	100–236
Mirid bugs 1st hatch	332–468	163–239
San Jose scale 1st catch	381–605	189–325
McIntosh at bloom	348–420	171–219

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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