scaffolds

Update on Pest Management and Crop Development

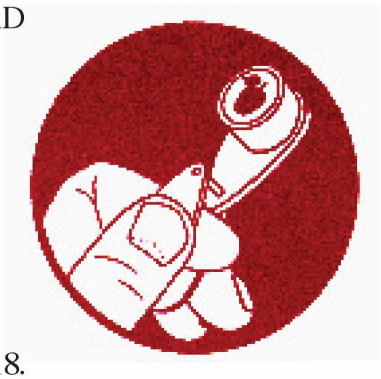
F R U I T J O U R N A L

July 12, 2010 VOLUME 19, No. 17 Geneva, NY

INSECTS

WHITE OUT?

ORCHARD RADAR DIGEST



Roundheaded Appletree Borer
Peak hatch roughly: June 29 to July 18.

Dogwood Borer
Peak hatch roughly: July 22.

Codling Moth
Codling moth development as of July 12: 2nd generation adult emergence at 13% and 2nd generation egg hatch at 1%.
2nd generation 7% CM egg hatch: July 20 (= target date for first spray where multiple sprays needed to control 2nd generation CM).

Oriental Fruit Moth
2nd generation - second treatment date, if needed: July 12.

Spotted Tentiform Leafminer
Optimum second sample date for 2nd generation STLM sapfeeding mines, if needed, is: July 13.

White Apple Leafhopper
2nd generation WAL found on apple foliage: July 24.

IN THIS ISSUE...

MODEL BUILDING
Following are the available readings as of today.
Insect model degree day accumulations:

Obliquebanded Leafroller (estimated progression of egg hatch in DD base 43°F after biofix: 100% egg hatch – 950 DD):

Location (Weather Sta.)	Biofix	DD (as of 7/12)
Highland	May 26	1308
Waterport	May 28	1262
Newfield (Cornell Orch)	June 1	1028
Geneva	June 1	1064
Lafayette	June 1	890
Wolcott (Sodus)	June 2	962
Lincoln (Farmington)	June 3	952
Sodus	June 3	937
Alton (Williamson)	June 3	978
Hilton (Waterport)	June 4	1065
Lyndonville	June 4	913

[NOTE: Consult our insect pest predictions on the NEWA Apple Insect Models web page:
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]

PEST FOCUS

Geneva: **San Jose scale** 2nd flight began today, 7/12.

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scaffolds FRUIT JOURNAL
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This newsletter available online at: http://www.nysaes.cornell.edu/ent/scaffolds/

BAD EGGS

STINKIN' UP THE PLACE
(Peter Jentsch, Entomology, Highland)

❖❖ Stink bugs (Heteroptera: Pentatomidae) are generally native to our region and are notable examples of locally migratory insects that live on a broad complex of plant hosts. Principal hosts found along the orchard edge or resident within herbicide strips include mullein, mustard, dock, plantain, milkweed, mallow, morning glory, thistles, vetch, and velvet grass. These adult "seed-feeders" most often enter our orchards during the dry periods of the season as host plants dry out. Irrigated tree fruit becomes very attractive to the stink bug complex during drought conditions, leading to late season feeding damage in pear, apple and peach orchards. Their mouthparts are designed to pierce the fruit skin and draw out the cellular contents of the fruit flesh, leaving behind dry cell walls that appear as corking when peeled.

The complex of stink bugs includes the green, brown and brown marmorated stink bug (*Acrosternum hilare*, *Euschistus servus* and *Halyomorpha halys*, respectively). The green and brown stink bugs are native to the region and are found throughout the state, while the brown marmorated stink bug is a newly emerging pest on fruit in the northern mid-Atlantic region and lower New York State. As you might suspect, stink bugs derive their name from the production of pungent and offensive chemicals released when they are disturbed. Relatively mild winters and reduced insecticide programs may help in fostering their overwintering success.

A recent addition to this complex, the brown marmorated stink bug, made its appearance in Highland, NY during the fall of 2008. A handful of specimens were brought into my office by a distraught gentleman looking for a way to rid them from his home. This species' native range is China, Japan, Korea, and Taiwan; it evidently is a first-class hitch-hiking pest, observed in cargo containers from Asia, and is able to maintain its grip to automobile radio antennas racing along the Pennsylvania turnpike. It has now been identified in parts of New Jersey, Maryland, Delaware, Connecticut, and the southern tier of New York.

The brown marmorated stink bug has distinct alternating light and dark bands on the antennae, and darker bands on the overlapping membranous area at the rear of the front pair of wings. It has copper, bluish-metallic tinted depressions on the head and pronotum not exhibited in other species of regional stink bugs. It is known to feed on a wide variety of host plants, including apple, peach, fig, mulberry, citrus fruits and persimmon, along with ornamental plants, weeds, and soybeans. It has been observed feeding on tree fruits in the U.S., resulting in the characteristic "catfacing," on peaches, which renders fruit unmarketable. It also can be an urban nuisance pest, as it seeks protected overwintering sites in and around homes.

Methods for scouting and managing the stink bug complex can be elusive, due to the lack of technical monitoring tools and the economic thresholds traditionally used in insect pest scouting and management. The first level of management for this pest is determining the level of damage your farm has experienced over the past five years. Drought conditions in the Hudson Valley during the latter part of the last few growing seasons have provided ideal conditions for adult stink bug migration and subsequent fruit injury. Weeds can play an important role in stink bug abundance, thus field proximity to weedy areas often results in higher populations and damage.

continued...

It's important to note that stink bug feeding differs dramatically among stone fruit, apple and pear. "Catfacing" injury to peaches by stink bug is very similar to that of the plant bug complex. Stone cells naturally occurring in pears are more pronounced in fruit with stink bug feeding injury as cell contents are removed and the thickened cell walls of stone cells remain. However, on apple, fruit damage appears as shallow, circular, light brown to white spongy pockets in the fruit flesh, usually from 5–10 mm in circumference, and 5–8 mm in depth. Stink bug feeding can easily be mistaken for cork spot (bitter pit). Typical feeding injury tends to be on the stem end or sides of the fruit, as those parts of the fruit surface are easier for the insect to stand on, and most likely to be covered by foliage, which provides protection as the bug feeds.

On apple, stink bug feeding and cork spot are distinguishable by several differences in the depressions on the apple surface. With stink bug feeding, the edge of the depression on the fruit surface is gradual instead of abrupt, as observed with cork spot. The corky flesh is always immediately beneath the skin in stink bug injury, and often separates from the skin. Stink bug injury always has a small puncture near the center of the feeding depression, requiring magnification to observe the feeding site. Occasionally, stink bug feeding may leave a "feeding sheath" within the flesh and protruding above the fruit surface.

Mark Brown, research entomologist at the USDA Appalachian Fruit Research Station in Kearneysville, WV, found that most stink bug damage occurs between 26–60 days before harvest. He has observed that 'Braeburn', 'Jonagold', 'Granny Smith' and 'Stayman' tend to have high stink bug injury levels at harvest, whereas 'Imperial Gala', 'Lawspur Rome', and 'Red Fuji' have been observed to have lower levels of stink bug injury.

Stink bugs are very difficult to manage for a number of reasons. They have a broad host range, including many crops and broadleaf weeds. They are highly mobile, frequently moving between weed hosts and fruit trees. They tend to be more active in the evening and during the night. Insecticide applications made during the day may not come in direct contact with the insect, subsequently reducing the effectiveness of the materials. Therefore, stink bugs are not continually exposed to insecticide residues for long periods of time, as are most other insect pests in managed orchards. Consequently, effective management of stink bug points toward repeated applications of insecticides, especially along the borders of orchards during the period of "adults in flight" late in the season.

Hudson Valley Laboratory studies conducted on apple in 2006 demonstrated reductions in stink bug feeding damage with Thionex 50WP (endosulfan), Warrior 1CS (lambda-cyhalothrin) and Danitol 2.4EC (fenpropathrin) treatments at 2-week intervals. The use of Thionex against aphids and leafhoppers will provide incidental control of stink bug (which is not on the label). Thionex has a 21-day PHI, with a maximum of 2 applications during the fruiting season at a maximum labeled rate of 5.0 lbs/A and a maximum seasonal use limit of 6.0 lbs/A. Danitol has a 14-day PHI, does include stink bug on the label, and (in NY) has a 16.0 fl oz/A rate allowed for stink bug, with a maximum limit of 32 fl oz/A per season. Danitol will give some control of European red mite, apple maggot, the internal lep complex and the leafhopper complex. Warrior has a 21-day PHI, also includes stink bug on the label, with a 2.56–5.12 fl oz/A use range for stink bug, and a maximum use rate of 20.48 fl oz/A per year post-bloom. Warrior gives some control of apple maggot, the internal lep complex and the leafhopper complex. Pyrethroids in general are less effective in hot weather and may cause late season mite flare-up.❖❖

GENERAL INFO

IT'S A DATE

EVENT REMINDER

❖❖ **Cornell Fruit Field Days, July 28-29**
REGISTRATION DEADLINE JULY 21

Cornell University will host the 2010 Fruit Field Days at the New York State Agricultural Experiment Station in Geneva, NY, on Wednesday and Thursday, July 28 & 29, from 8:00 a.m. to 5:00 p.m. each day. Grapes and berry fruits will be the focus on July 28, and tree fruits will be covered on July 29. Following is a list of the scheduled presentations on the various fruit research being conducted by Cornell faculty, staff and extension specialists:

Wednesday, July 28
8:00-8:15, Registration
8:30-9:30, Darrow Farm
McDermott - Reduced till approach to strawberry management
Weber - Cultivation tools for planting year weed management in matted row
Cox - Blueberry virus survey initiatives for NY
Carroll - Results of a survey of blueberry plantings for canker diseases
9:30-12:00, Robbins Farm
Weber - High tunnel raspberries I: Production basics
Weber - High tunnel raspberries II: Variety comparisons
Loeb - Bramble pest management in high tunnels
Loeb - Validating temperature model to predict phenology of grape berry moth
Wilcox - Grape diseases
Landers - Adjusting airflow and monitoring spray volume on canopy sprayers
12:00-1:00, Lunch
1:00-2:00, Visit Sponsors
2:00-3:00, Research Farm North
Loeb - Trap crop to manage damage from tarnihsed plant bug in strawberry
Heidenreich - Phase II complete for Cornell Fruit Website
Heidenreich - Cornell Berry Tool: "One Stop Shop" for berry pest management
3:00-4;00, Crittenden Farm
Moyer - Grape powdery mildew: Predicting fruit disease severity
Gadoury - New information on controlling strawberry powdery mildew
Vanden Heuvel - Coordinated wine grape variety evaluations in the eastern USA
McKay - Elderberry and Aronia production for New York"
4:00-5:00, Loomis Farm
Burr - Crown gall indexing for grape
Lakso - Variability in environment and physiology of grapevines
Carroll - Weather stations for NEWA
Cheng - Nitrogen management to improve yeast available nitrogen in Riesling

continued...

Thursday, July 29
8:00-8:15, Registration
8:30-10:00, Research Farm South
Robinson - The Tall Spindle apple orchard system
Bellinder - Development of new herbicides in established trees
Robinson - Chemical thinning and return bloom of apple
Cheng - Nutritional requirements for high density apple trees
Robinson - Promising new apple rootstocks
10:00-12:00, Darrow Farm
Cox - Apple scab management in a DMI-resistant orchard
Rosenberger - Options for applying postharvest treatments on apples
Landers - Adjusting airflow and monitoring spray volume on canopy sprayers
12:00-1:00, Lunch
1:00-2:00, Visit Sponsors
2:00-3:00, Loomis Farm
Carroll - Bacterial canker of sweet cherry
Robinson - High density systems for growing sweet cherries in NY
Robinson - Super high-density systems for sweet cherries under tunnels
3:10-3:40, Research Farm North
Aldwinckle - Factors affecting fire blight infection of apple rootstocks
3:40-5:00, Research Farm South
Breth - 3-year large scale mating disruption of codling moth in NY
Lakso - Weather and carbohydrate relations to optimize chemical thinning
Lakso - Optimizing irrigation needs in NY apple orchards
Xu - Apple genetic/genomic studies at NYSAES
5:10-5:30, Lucey Farm
Robinson - High density pear training systems and rootstocks

Pre-registration is required, and can be done either online (via credit card) or by mailing in a check plus the registration form. Both registration methods, are available through the NYSAES web page (http://www.nysaes.cornell.edu/) and the Cornell Fruit web page (http://www.fruit.cornell.edu/). **NOTE: Registration Deadline is Wednesday July 21**. The cost of registration is $15 per person for single-day attendance and $25 for both days; lunch will be provided each day. For sponsorship and exhibitor information, contact Debbie Breth at 585-798-4265 or dib1@cornell.edu.

Note also that this event is being held in conjunction with the IFTA (International Fruit Tree Association) New York Study Tour. This event includes a bus tour to Orleans County on Wednesday; a tour in the Geneva area on Thursday; and a bus tour to Wayne County on Friday. Attendees may stay in Rochester, N.Y., on Tuesday evening, July 27. The group will be staying in Geneva on Wednesday evening, July 28, and Thursday evening, July 29. On Friday afternoon, July 30, after the tours in Wayne County, the tour will return to Rochester. For more information, please visit http://www.ifruittree.org/ or call 636-449-5083. To register, please visit http://www.ifruittree.org/.
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FIELD NOTES

Regional Trap Numbers
Week Ending 7/12, Avg No./trap

Location/County	Date	STLM	OFM	LAW	CM	OBLR	AM
Lyndonville/Orleans	7/9	243	2.3	4.3	1.7	0.7	6.0
Waterport/Orleans	7/9	55.3	2.3	8.7	0.7	0.0	1.7
Hilton/Monroe	7/9	132	0.3	2.7	2.0	1.0	0.7
Lincoln/Wayne	7/8	141	2.0	3.7	1.0	0.0	1.3
Sodus-Lakesite/Wayne	7/1	66.0	0.0	0.0	0.3	1.0	–
Sodus-Inland/Wayne	7/8	140	0.0	0.0	0.0	3.7	1.0
Alton/Wayne	7/8	82.0	0.0	1.3	0.0	1.0	0.7
Wolcott/Wayne	7/8	58.0	0.3	0.0	0.0	1.3	0.3
Newfield/Tompkins	7/6	1728	0.0	0.0	3.7	4.3	17.0
Lafayette/Onondaga	7/6	228	0.0	4.3	1.3	1.7	0.0
Chazy/Clinton	7/6	1152	0.0	5.3	0.0	0.0	2.7
Valcour/Clinton	7/6	1146	0.7	10.7	0.3	1.0	5.3
Peru/Clinton	7/6	846	0.7	4.0	0.3	0.0	3.7
Granville/Washington	7/9	1051	0.0	40.7	5.3	15.0	2.0
Burnt Hills/Saratoga	7/9	766	0.0	0.5	11.0	7.5	7.5
Altamont/Albany	7/9	278	0.0	0.5	6.0	0.5	2.0
Modena/Ulster	7/8	480	0.0	0.0	0.0	9.0	–
Marlboro/Ulster	7/8	84.5	8.5	5.0	3.5	2.5	2.5
Accord/Ulster	7/8	No data - sprayed					

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	7/6	7/8	7/12
Redbanded leafroller	0.0	0.5	0.3
Spotted tentiform leafminer	36.5	43.0	14.5
Oriental fruit moth	4.5	0.5	1.6
Lesser appleworm	0.0	0.0	0.0
American plum borer	—	0.0	0.1
Lesser peachtree borer	0.0	0.0	0.0
San Jose scale	0.0	0.0	1.4*
Obliquebanded leafroller	0.0	0.0	0.0
Peachtree borer	0.1	1.0	0.1
Apple maggot	3.6	5.0	4.5

* first catch

Highland, NY

	7/6	7/12
Redbanded leafroller	2.1	1.0
Spotted tentiform leafminer	63.8	36.8
Oriental fruit moth	3.1	3.6
Lesser appleworm	1.8	1.7
Codling moth	1.5	1.6
Obliquebanded leafroller	1.8	0.7
Apple maggot	0.1	0.5

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–7/12/10):	1994	1350
(Geneva 1/1–7/12/2009):	1582	975
(Geneva "Normal"):	1687	1094
(Geneva 1/1–7/19 predicted):	2233	1539
(Highland 3/1–7/12/10):	2200	1443

Coming Events:	Ranges (Normal ±StDev):	
Spotted tentiform leafminer 2nd flight subsides	1977–2371	1299–1637
STLM 2nd gen. tissue feeders present	1378–2035	913–1182
American plum borer 2nd flight begins	1494–2034	988–1340
American plum borer 2nd flight peak	1983–2459	1338–1676
Codling moth 2nd flight begins	1569–2259	1023–1515
Codling moth 2nd flight peak	1931–2735	1278–1892
Comstock mealybug 1st flight subsides	1818–2132	1216–1418
Comstock mealybug 2nd gen. crawlers emerge	2234–2624	1505–1781
Oriental fruit moth 2nd flight subsides	2044–2468	1353–1717
Redbanded leafroller 2nd flight peak	1546–1978	991–1323
Redbanded leafroller 2nd flight subsides	2192–2668	1482–1830
San Jose scale 2nd flight peak	2103–2499	1411–1749
Apple maggot 1st oviposition punctures	1605–2157	1144–1544

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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