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Update on Pest Management and Crop Development

June 3, 2013

COMING EVENTS

	43°F	50°F
Current DD accumulations		
(Geneva 1/1-6/3):	770	475
(Geneva 1/1-6/3/2012):	1057	648
(Geneva "Normal"):	770	435
(Geneva 1/1-6/10 predicted):	904	564
(Highland 1/1-6/3/2012):	859	498

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

American plum borer		
1st flight peak	625-973	340-592
Black cherry fruit fly 1st catch	702-934	380-576
Codling moth 1st flight peak	571-999	311-591
European red mite		
summer eggs hatch	737-923	424-572
Obliquebanded leafroller		
pupae present	601-821	328-482
Pear psylla 1st summer gen		
adults present	737-885	428-526
Redbanded leafroller		

1st flight subsides....................	589-899	329-561
Rose leafhopper adults		
on multiflora rose....................	689-893	366-498
San Jose scale 1st flight peak......	554-746	294-418
Spotted tentiform leafminer		
1st flight subsides....................	674-956	372-580

Pest Focus

Geneva: European Apple Sawfly damage noted 5/29.
1st Pandemis Leafroller, Obliquebanded Leafroller and Dogwood Borer trap catches today, 6/3.

Highland: Pear Psylla 2nd generation egg laying starting.

TRAP CATCHES (Number/trap/day)

Geneva

	5/23	5/2	5/30	6/3
Redbanded Leafroller	3.5	0.1	0.3	0.0
Spotted Tentiform Leafminer	2.8	0.4	0.0	0.0
Oriental Fruit Moth	0.3	0.4	1.0	0.1
Lesser Appleworm	0.2*	0.0	0.0	0.0
San Jose Scale	0.7*	0.6	1.3	0.3
Codling Moth	2.3	1.1	2.0	2.0
American Plum Borer	0.2	0.0	1.0	.05
Lesser Peachtree Borer	1.2	0.5	0.0	0.8

Pandemis Leafroller	-	-	-	0.3*
Obliquebanded Leafroller	-	-	-	0.1*
Dogwood Borer	-	-	-	1.6

Highland (Peter Jentsch)

	5/13	5/20	5/28	6/3
Redbanded Leafroller	5.4	1.8	1.1	0.0
Spotted Tentiform Leafminer	15.1	8.0	2.0	0.3
Oriental Fruit Moth	1.3	1.4	3.8	1.2
Lesser Appleworm	3.1	0.9	-	0.1
Codling Moth	0.0	1.7*	2.1	1.6
Obliquebanded Leafroller	0.0	-	0.0	0.6*

* = 1st catch

ORCHARD RADAR DIGEST

[Box Text: STACKED UP]

Geneva Predictions:

Roundheaded Appletree Borer
RAB egglaying begins: June 2. Peak egglaying period roughly: June 25 to July 10.

Dogwood Borer
First DWB egg hatch roughly: June 24.

Codling Moth
Codling moth development as of June 3: 1st generation adult emergence at 52% and 1st generation egg hatch at 3%.
In most orchards, insecticides applied for plum curculio and apple maggot prevent codling moth damage. If targetted codling moth control is needed, key management dates are:
1st generation 3% CM egg hatch: June 3, = target date for first spray where multiple sprays needed to control 1st generation CM.
1st generation 20% CM egg hatch: June 12, = target date where one spray needed to control 1st generation CM.

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected:
June 7.

San Jose Scale
1st generation SJS crawlers appear: June 17.

Spotted Tentiform Leafminer
2nd STLM flight begins around: June 15.

[Section: INSECTS]

FUZZY BRANCHES
(Art Agnello, Entomology, Geneva; ama4@cornell.edu)
[Box Text: CHEEZE IT!]

In most years at this point in the season, we start to receive reports of the first infestations of woolly apple aphid (WAA) in problem sites in western NY. WAA colonizes both above-ground parts of the apple tree as well as the roots, where it commonly overwinters. In the spring, nymphs crawl up on apple trees from the roots to initiate aerial colonies. Most nymphs are born alive to unmated females on apple trees during the summer. 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.

The aerial colonies occur most frequently on succulent tissue such as the current season's growth, water sprouts, unhealed pruning wounds, or cankers. Heavy infestations cause honeydew and sooty mold on the fruit and galls on the plant parts. Severe root infestations can stunt or kill young trees, but usually do not damage mature trees. However, large numbers of colonies on trees may leave sooty mold on the fruit, which interferes with harvest operations because red sticky residues from crushed WAA colonies may accumulate on pickers' hands and clothing.

During late June, water sprouts, pruning wounds, and scars on the inside of the tree canopy should be examined for WAA nymphs. During mid-July, new growth around the outside of the canopy should be examined for WAA colonies. No economic threshold has been determined for treatment of WAA, but they are difficult to control, so the occurrence of any colonies should prompt the consideration of some remedial action.

WAA is frequently parasitized by *Aphelinus mali,* a tiny wasp that is also native to North America. Parasitized aphids appear as black mummies in the colony. *A. mali* has been successfully introduced to many apple-growing areas of the world, and is providing adequate control of the WAA in several areas. It does not provide sufficient control in commercial orchards in our region because of its sensitivity to many commonly used insecticides; however, the wasp is thought to reduce WAA populations in abandoned orchards.

WAA is difficult to control with insecticides because of its waxy outer covering and tendency to form dense colonies that are impenetrable to sprays. WAA is resistant to the commonly used organophosphates, but other insecticides are effective against WAA, including Diazinon and Thionex, and some newer products such as Admire, Assail, Beleaf, or Movento may offer suppression (for Movento and Assail, addition of a non-ionic surfactant or horticultural mineral oil will improve activity). Good coverage to soak through the insects' woolly coverings is integral to ensuring maximum efficacy. Additionally, a Lorsban trunk application for borers made at this time will effectively control any crawlers that might be contacted by these sprays.

[Section: DISEASES]

CONTROLLING FABRAEA LEAF SPOT ON PEARS
(Dave Rosenberger, Plant Pathology, Highland;
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[Box text: QUITE A SPOT]

Fabraea leaf spot caused by *Diplocarpon mespili* (formerly *Fabraea maculata*) can cause severe defoliation of pear trees in late summer. Trees that lose their leaves during August cannot mature their fruit, and most fruit on defoliated trees have spots that make them unmarketable anyway. This fungal pathogen can attack most pear cultivars, but it is especially severe on Bosc and Seckel. The diseases has been confounding pear growers in the Hudson Valley, southern New England, and the Cumberland-Shenandoah region for many years

The fungus can overwinter either as twig canker on last year's shoots or in fallen leaves. Peak ascospore discharge from fallen leaves occurs several weeks later than for apple scab. Fabraea epidemics usually begin very slowly and surreptitiously, then accelerate during hot humid periods in July and August. The disease first appears as occasional tiny purple spots on leaves that easily escape notice, but controlling those early infections is critical for preventing the disease from gaining an early start. When initial infections begin to produce conidia, the disease can spread extremely rapidly if trees are not protected with fungicides. Even the best fungicide programs may fail if the disease becomes established and there is a lot of rain during late July and August.

The initial spots on leaves and fruit produce distinctive conidia in a gelatinous matrix. Spots on leaves and fruit that appear totally desiccated when dry will suddenly swell when wetted as the spore matrix absorbs water. Spores are then disseminated by splashing or wind-blown rain. The sticky spores can also be disseminated by insects such as pear psylla and pear rust mite that contact the matrix and then move to other parts of the leaf or to other leaves. Arthropod dissemination can be important during long periods of dry weather if there is enough wetting from dew to allow new infections. Infections can occur anytime that trees remain wet for eight hours during summer.

Most pathogens causing foliar diseases on apples can infect only newly unfolded leaves, so the pace of infection slows as terminal growth slows in summer. Unfortunately, pear leaves and fruit do not gain resistance to Fabraea as they age. Therefore, the disease can spread rapidly to all of the leaves and fruit on the tree any time that there is a gap in fungicide protection. Fungicide protection is usually exhausted after 1.5 to 2 inches of cumulative rainfall following a fungicide application, and none of the fungicides seem to have much post-infection activity against this disease. Therefore, it is very important to recover orchards immediately after rains that are sufficient to deplete protective residues, especially in orchards that had Fabraea last year or where some leaf spotting is already visible this year.

Mancozeb fungicides provide the best defense against Fabraea infection, but they can only be applied seven times at a maximum rate of 3 lb/A, and they have a 77-day preharvest interval. The best strategy for controlling Fabraea is to apply mancozeb at weekly intervals starting at green cluster and continuing until either all seven of the allowable applications have been made or until the 77-day preharvest interval is reached. The mancozeb applications should prevent spring and early summer infections. After mancozeb can no longer be applied, the best alternatives are Syllit, Flint, and

Pristine, all of which have labels allowing summer applications for pear scab and/or sooty blotch and flyspeck (SBFS) even though none of them are specifically labeled for Fabraea.

In 2012, we tested several fungicides that are labeled for use on pears, along with Merivon, which is not yet labeled in New York. We found that Inspire Super was less effective against Fabraea than either Flint or Syllit. Merivon and Fontelis-plus-Flint were no more effective than Flint used alone (Table 1). Thus, the SDHI fungicides (i.e., Fontelis, and the non-strobilurin component of Merivon) either lack activity or are no stronger than the strobilurins with which they were applied in our test. Pristine was not included in this trial, but it is presumably equivalent to Flint for controlling Fabraea, and Pristine will also suppress postharvest decays in pears if it is applied shortly before harvest.

Syllit, Flint, and Pristine should be effective if applied on a 14 to 21 day interval during summer so long as insects and mites are controlled and fungicide coverage is renewed after every 1.5 to 2 inches of accumulated rainfall. None of the treatments in our 2012 trial provided complete disease control (Table 1), perhaps because the accumulated rainfall during the interval preceding fungicide applications on 15 Jun and 3 Jul totaled 3.0 and 2.5 inches, respectively. All of the treatments might have provided better control if we had shortened those two spray intervals by reapplying fungicides before we accumulated 2 inches of rainfall.

Syllit provides a different chemistry group that can be used in rotations during summer to control Fabraea leaf spot. Syllit can be applied only three times in a season. We tested the maximum label rate of Syllit, so the effectiveness of lower rates is unknown. Syllit will not control SBFS or late-season fruit rots. SBFS, along with sooty molds that develop on honeydew deposits from pear psylla, can pose problems on smooth-skinned pear cultivars like Bartlett. Therefore, it may be advisable to use Syllit during early summer, either in three back-to-back sprays, or in alternating sprays with Flint. In previous trials we found that, although Flint controlled both Fabraea and SBFS, it was not very effective against the sooty molds associated with high psylla populations. Topsin M controls both SBFS and psylla-related sooty molds, but it is relatively ineffective against Fabraea even though it is labeled for that disease. Topsin M could be combined with Syllit or any of the other fungicides if protection against psylla-related sooty molds is needed.

Several years ago, Peter Jentsch and I noted in one of his pear insecticide trials that Fabraea leaf spot was less severe in plots that received regular oil sprays. We followed up by testing oil sprays the next year and found that 1% oil, when applied instead of fungicides, delayed Fabraea-induced defoliation even though it did not delay the time that Fabraea first appeared in the oil-sprayed trees. Lab studies showed that oil suppressed spore production and release, thereby slowing progress of the epidemic. Regular applications of 1% oil can adversely affect tree health, with the most visible evidence being enlarged lenticels on new wood. Because our observations showed that oil is less effective than fungicides for preventing infection, we suggest that oil be added to fungicides only if/when initial symptoms of Fabraea are observed on foliage. Our assumption is that adding oil with late-summer fungicide sprays in orchards where Fabraea is visible on foliage will enhance fungicide activity by decreasing conidial production/dissemination. Fungicides always perform better as inoculum levels are reduced, and using oil with fungicides should suppress spore production and therefore improve fungicide performance in orchards where Fabraea is not completely controlled by the fungicides alone.

The pathogen causing Fabraea leaf spot on pears also infects quince, hawthorn, *Amelanchier* sp. (shadbush or serviceberry), *Chaenomeles* sp. (ornamental flowering quince), *Cotoneaster* sp., *Mespilus* sp. (Medlar), *Pyracantha* (firethorn), *Photinia*, and *Sorbus.* Trees of these species growing adjacent to orchards may provide inoculum for orchards even where the disease within the orchard is controlled.

Table 1. Effectiveness of fungicides for controlling Fabraea on pears at the Hudson Valley Lab in 2012.

Fungicides and amounts of formulated product/100 gal of dilute spray (multiply by 3 for an equivalent rate/A)[z]	Foliar ratings on Bosc[y]		% fruit with Fabraea[x]	
	% leaves infected 29 Aug	% defo-liation 29 Aug	Bosc 4 Sep	Bartlett 22 Aug
1-Untreated control	95.5e[v]	54.7c	95.2b	81.4b
2-Flint 0.83 oz[z]	46.0bc	17.4a	18.5a	11.0a
3-Fontelis 4.67 oz + Flint 0.67 oz[z]	61.3cd	21.8a	28.1a	6.5a
4-Merivon 1.33 fl oz[z]	32.3ab	23.0ab	23.8a	7.2a
5-Syllit 16 fl oz[z]	18.3a	20.8a	0.0a	6.0a
6-Inspire Super 4 fl oz[z]	74.5d	34.2b	-.-[v]	4.2a

[z] Between 7 April to 21 May, all plots including controls received seven weekly airblast applications of Manzate 3 lb/A + LI-700 6 fl oz/100 gal. The treatments listed were applied (in combination with LI-700 at 8 fl oz/100 gal) on 1 & 15 June, 3 & 17 July, and 1 & 16 Aug.
[y] Based on counts from 20 shoots per plot.
[x] Based on evaluation of 60 fruit/plot or all available fruit if < 60.
[w] Means separations within columns were determined using Fishers Protected LSD ($P \leq 0.05$).
[v] Data not available due to low fruit numbers caused by spring frosts.

[Section: GENERAL INFO]

EVENT ANNOUNCEMENTS

[Box text: GROW AND STOW]

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. There will be two tour loops of tree fruit and a single tour loop of grapes and small fruit crops. 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 researchers on the Geneva and Ithaca campuses, and on commercial farms elsewhere in the state. The focus of the field day will be on all fruit commodities of key importance to New York's $350 million industry: apples, grapes, cherries, raspberries, strawberries, blueberries and other berry crops. During lunch, equipment dealers and representatives from various companies will showcase their latest products and technologies to improve fruit crop production and protection.

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 Rd. in Geneva, NY. Signs will be posted. Attendees will be brought to the different research plots by bus to hear presentations by researchers on the work being conducted. Details on registration and program content will be available soon.

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.

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