scaffolds

Update on Pest Management and Crop Development

FRUIT JOURNAL

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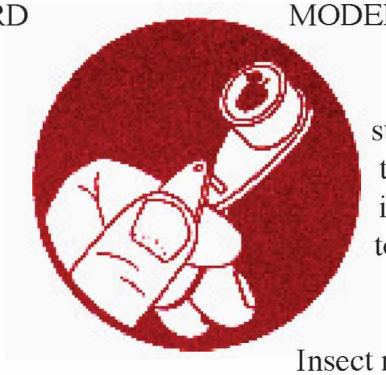
INSECTS

NUMBERS RACKET

ORCHARD RADAR DIGEST



MODEL BUILDING

A number of the NEWA weather stations have not registered data for the past several days, but following are the available readings as of today.

Geneva Predictions:

Roundheaded Appletree Borer

RAB adult emergence begins: May 30; Peak emergence: June 14.

RAB egglaying begins: June 9. Peak egglaying period roughly: June 29 to July 13.

Codling Moth

Codling moth development as of May279: 1st generation adult emergence at 10% and 1st generation egg hatch at 0%

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).

Obliquebanded Leafroller

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

Oriental Fruit Moth

1st generation second treatment date, if needed: May 30.

Spotted Tentiform Leafminer

Optimum sample date is around May 24, when a larger portion of the mines have become detectable.

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Insect model degree day accumulations:

Oriental Fruit Moth (Apples - targeted spray application at 55–60% egg hatch, predicted at 350–375 DD base 45°F after biofix):

Location	Biofix	DD (as of 5/27)
Albion	April 25	266 (as of 5/25)
Appleton (S)	April 25	295
Geneva	April 24	310
Knowlesville	April 23	331
Sodus	April 24	271
Williamson	April 24	289

continued...

IN THIS ISSUE...

Codling Moth (targeted spray application at newly hatching larvae, predicted at 250–360 DD base 50°F after biofix):

Location	Biofix	DD (as of 5/27)
Geneva	May 12	96
Sodus	May 12	81
Williamson	May 12	87

Plum Curculio (spray coverage required until 308 DD base 50°F after biofix; i.e., McIntosh petal fall):

Location	Biofix	DD accumulated
Clifton Pk (Saratoga Co.)	May 10	81 (as of 5/21)
Clintondale (Ulster Co.)	May 8	73 (as of 5/22)
Geneva	May 14	84
Highland	May 14	89
Red Hook (Dutchess Co.)	May 9	166

[NOTE: Consult our mini expert system for arthropod pest management, the Apple Pest Degree Day Calculator:
http://www.nysaes.cornell.edu/ipm/specware/newa/appledd.php
Find accumulated degree days between dates with the Degree Day Calculator:
http://www.nysaes.cornell.edu/ipm/specware/newa/
Powered by the NYS IPM Program's NEWA weather data and the Baskerville-Emin formula]

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Y'ALL GO BACK NOW, Y'HEAH!

SOUTHERN GUSTS BRING SOUTHERN GUESTS
(Art Agnello, Entomology, Geneva)

❖❖ Potato leafhopper (PLH) does not overwinter in the northeast but instead migrates on thermals (warm air masses) from the south. It is generally a more serious problem in the Hudson Valley than in western N.Y. or the Champlain Valley; however, weather fronts such as those resulting from the recent unrest occurring in the middle states provide ample opportunity for most of the region to share the wealth, so it doesn't hurt to tour observantly through a few orchards now. Because PLH come in constantly during the season, there are no distinct broods or generations and the pest may be present continuously in orchards from June through harvest.

PLH feeds on tender young terminal leaves. Initially, injured leaves turn yellow around the edges, then become chlorotic and deformed (cupping

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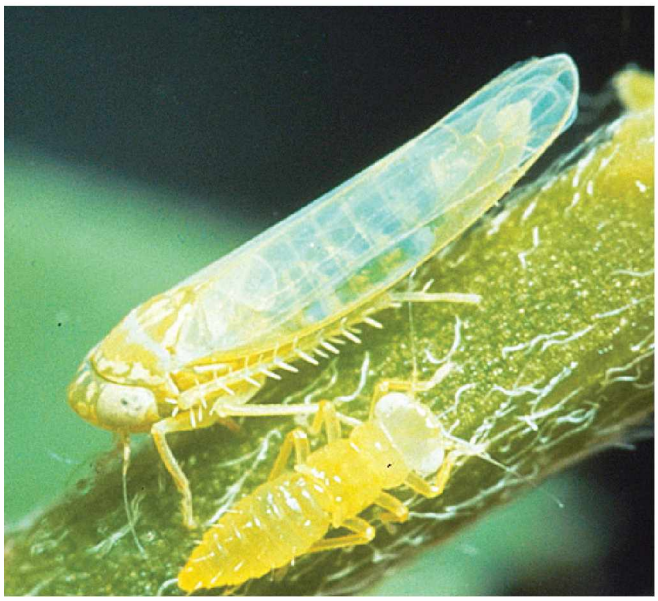
upward) and later turn brown or scorched. Damage is caused by a toxin injected by PLH while feeding.

PLH also occasionally causes symptoms similar to the effects of growth regulators, such as excessive branching preceding or beyond the point of extensive feeding. PLH damage is often mistaken for injury caused by herbicides, nutrient deficiency, or over-fertilization. PLH injury may not be serious on mature trees but can severely stunt the growth of young trees.

Nymphs and adults should be counted on 50–100 randomly selected terminal leaves in an orchard. Older trees should be sampled approximately every three weeks during the summer. Young trees should be sampled weekly through July. PLH nymphs are often described as moving sideways like crabs, whereas WALH generally move forward and back. No formal studies have been conducted in N.Y. to determine the economic injury level for PLH on apples, so we suggest a tentative threshold of an average of one PLH (nymph or adult) per leaf. Little is known about the natural enemies of PLH, but it is assumed that they cannot effectively prevent damage by this pest in commercial New York orchards.



Damage by this migratory pest is usually worse when it shows up early. PLH can cause significant damage to newly planted trees that are not yet established. When PLH, white apple leafhopper (WALH), rose leafhopper (RLH) and aphids are present, control measures are often warranted.

Field trials were conducted during 2000 in the Hudson Valley to evaluate reduced rates of Provado against all three species of leafhoppers. Provado was applied in combinations at a full rate (2 oz/100 gal) and a quarter rate (0.5 oz/100 gal), at varying intervals (3rd–5th cover). Nymphs of PLH, WALH, and RLH were sampled and leaf damage by PLH was monitored.

Because of Provado's translaminar activity, all rates and schedules produced excellent control of WALH/RLH nymphs (however, reduced rates will not control leafminer). Against PLH nymphs, the number of applications was shown to be more important than rate; i.e., better protection of new foliage. Considering the percentage of leaves with PLH damage, the number of applications again appeared to be more important than application rate.

Although data on aphids were not taken, we know that Provado is an excellent aphicide, and the same principle would hold as for PLH — maintaining coverage of new growth is more important than rate. Moreover, reduced rates are likely to increase the survival of cecidomyiid and syrphid predators that are common and effective biological control agents. ❖❖

DISEASES

ENCORE

OPTIONS FOR CONTROLLING SECONDARY SCAB

(Dave Rosenberger, Hudson Valley Lab, Highland)

❖❖ Apple scab is now showing up on leaves in some orchards despite a relatively dry spring with ideal windows for fungicide applications. When scab appears on leaves before or shortly after petal fall, fungicide programs should be adjusted immediately so as to protect developing fruitlets from secondary infections. Unfortunately, it is no longer possible to suggest a single strategy that is appropriate for all orchards. Decisions on how to fight secondary scab are complicated by widespread but highly variable fungicide resistance problems and by increasing use of insecticides that must be applied with oil. Following are considerations that may help growers select the best option for fighting secondary scab given the constraints of the orchards in question.

Where the SI fungicides are still working and captan is an option (i.e., no oil is being applied), the best option is a combination of Nova at 5–6 oz/A plus Captan 80W at 3–5 lb/A (or the equivalent of another formulation). Rubigan and Procure can be substituted for Nova so long as they are used at the high label rates. These SI fungicides penetrate leaves, arrest scab development, and shut down spore production at the same time that captan in the combination provides formidable protection against fruit infection. In states other than New York where Indar and Inspire Super are registered, these products might also be effective for fighting secondary scab, but I have less experience with them and cannot vouch for their ability to suppress scab in established lesions. Where captan is not an option because of the need for oil in the spray mix, then mancozeb can be substituted for captan in this mixture without much loss of activity.

Where the SI fungicides are no longer effective, or where their activity is suspect, the best option is a combination of dodine (Syllit) plus captan IF dodine is still effective for the orchards in question. In my opinion, dodine should never be applied alone because dodine resistance is widespread and often unpredictable due to lack of a complete orchard history. Where dodine is effective, it will shut down scab almost as well as the SI fungicides. Including captan (or mancozeb or Flint or Sovran) with dodine will ensure that scab will not go completely unchecked in orchards where dodine resistance may be present but not recognized. Where Syllit is used to arrest secondary scab, it should be applied at no less than 3 pt/A.

Where fungicide resistance to both SI fungicides and dodine is present or suspected, Flint or Sovran can be used in back-to-back sprays in combinations with mancozeb or captan. Flint and Sovran are much less effective than dodine and the SIs for suppressing scab growth in established lesions, but they reduce spore production and thereby reduce infection "pressure" in the orchard. They provide the most benefit when applied as soon as symptoms appear and BEFORE conidia from primary lesions have a chance to cause secondary infections. Because these fungicides have such reduced activity against established scab lesions (compared with dodine and the SIs), they will perform better when combined with captan as compared with combinations with mancozeb. For postbloom applications, mancozeb rates are limited to 3 lb/A, which is equivalent to only about 3 lb/A of Captan 50W or 30 oz/A of Captan 80W. These rates are not adequate for fully protecting fruit against the onslaught of millions of scab conidia. Thus, growers facing a scab outbreak in orchards where dodine and the SI fungicides are not working should probably choose captan (either alone on in combinations) as their primary defense against scab, even if that means that insecticide and miticide choices are limited due to the inability to apply oil. This is especially true for cultivars such as McIntosh that are highly susceptible to scab.

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High rates of captan used alone will often suffice to keep scab off of fruit, even when there is considerable leaf scab. Captan should be applied at 7–10-day intervals, depending on intervening rainfall. Good coverage is especially critical until apple fruit reach roughly an inch in diameter, because young fruitlets are nearly as susceptible as new leaves, whereas fruit become more resistant to scab as they enlarge. Hot weather with several days in the mid-80s will significantly reduce viability of conidia produced in scab lesions, but regular protection with captan may be needed throughout summer if summer weather remains cool and wet. Using captan alone has the advantage of avoiding the tremendous selection pressure for resistance that occurs when SIs, dodine, Flint, or Sovran are used to suppress secondary scab.

So far, we have addressed only the question of "what do I do now?" Perhaps more important in the long run is figuring out what factors allowed scab to become established in the first place. As noted in a previous article (http://www.nysaes.cornell.edu/ent/scaffolds/2008/080421.html#disease), there are various reasons for scab control failures in a dry year. Failure to recover orchards ahead of a major infection period could be one cause. Information on infection periods for various sites around New York State can be accessed via the NEWA Apple Home Page (http://newa.nysaes.cornell.edu/public/apple_home.htm). Click on "Apple Scab Infection Events" and then choose the weather station(s) closest to you. If spray coverage was lacking prior to one of the prebloom scab infection events, then that is a likely cause of the scab now present in the orchard.

However, I suspect that most scab control failures are attributable to either poorly calibrated sprayers that result in low-rate fungicide applications, or to poor spray coverage caused by wind, improper nozzle arrangements, and/or undersized equipment. Where scab control failures have occurred, calibration and rates of materials added to the tank should be rechecked so that application errors can be corrected before they are compounded.

A quick and inexpensive way to check spray coverage is to add several pounds of Surround (kaolin clay) to a spray tank when the tank is nearly empty. Spray out the remainder of the tank and then check leaves for the highly visible residue of Surround. Leaves left unspotted after an application of Surround are leaves that are also unprotected by fungicide. In a year with frequent rains, rains can redistribute protectant fungicides and thereby mask the effects of poor spray coverage. In a year with extended dry periods, incomplete spray coverage is a likely contributor to unexpected scab control failures. Sometimes disease control failures can be attributed to "acts of God." More frequently, they result from non-divine operator error! ❖❖

PEST FOCUS

Geneva:
Codling moth and **San Jose scale** 1st catch 5/26.
Highland:

Highland:
Plum curculio oviposition and feeding damage and **European apple sawfly** damage continuing on apple.

GENERAL INFO

SHADES OF GRAY

REMINDER OF TOWER AND SENSORS FIELD DEMONSTRATIONS (Andrew Landers, Entomology, Geneva)

❖❖ There will be two demonstrations that will showcase equipment that was purchased through a USDA Conservation Innovation Grant. The purpose of this grant was to bring a new concept or technology to an area that will reduce environmental impact and increase profitability for agriculture producers. Ten Farmers received cost-share to purchase ten new sprayers in 2007. The District is hoping this program will lead to more cost–share opportunities in the future for farmers to purchase conservation type equipment.

• May 29, 2008 at 2:30 pm at Joe Heberle's Farm, Lakeshore Road, Town of Kendall

• June 10, 2008 at 10:00 am, LynOaken Farms, Alps Road, Town of Yates

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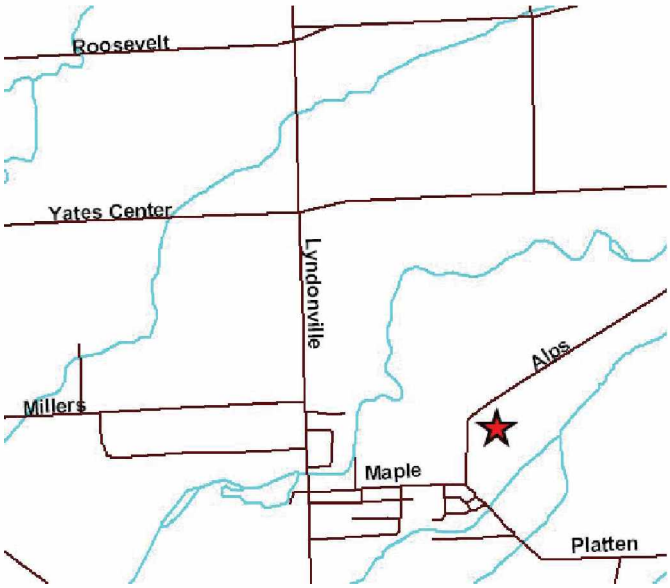
Heberle Farm



Oakes Farm

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	5/19	5/22	5/26
Redbanded leafroller	1.1	0.2	0.0
Spotted tentiform leafminer	7.1	2.0	3.0
Oriental fruit moth	0.1	0.2	0.4
American plum borer	0.3*	0.0	0.0
Lesser peachtree borer	0.0	0.0	0.1
Lesser appleworm	0.4	0.0	0.0
San Jose scale	0.0	0.0	9.3*
Codling moth	0.0	0.0	0.5*

* first catch

Highland, NY

	5/19	5/26
Redbanded leafroller	0.9	0.4
Spotted tentiform leafminer	6.0	3.0
Oriental fruit moth	0.4	0.6
Codling moth	0.5	2.4
Lesser appleworm	0.4	0.6

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–5/27/08):	611	325
(Geneva 1/1–5/27/2007):	601	320
(Geneva "Normal"):	640	362
(Geneva 1/1–6/2 Predicted):	707	384
(Highland 3/1-5/27-08):	605	294

Coming Events:	Ranges (Normal ±StDev):	
American plum borer 1st flight peak	561–869	279–511
Lesser appleworm 1st flight peak	379–791	186–448
Codling moth 1st flight peak	599–989	325–581
Mirid bugs hatch complete	489–639	252–350
Plum curculio oviposition scars present	485–589	256–310
Pear psylla hardshell present	493–643	271–361
Redbanded leafroller 1st flight subsides	591–911	329–563
Obliquebanded leafroller pupae present	601–821	328–482
Rose leafhopper adult on multiflora rose	689–893	366–498
San Jose scale 1st flight peak	598–732	320–410

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