scaffolds

Update on Pest Management and Crop Development

FRUIT JOURNAL

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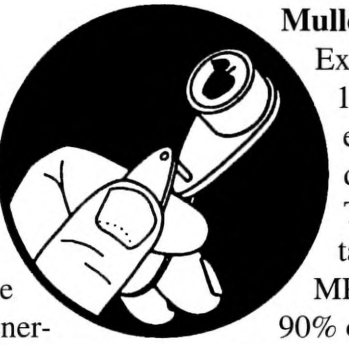
INSECTS

BUG SCREEN

ORCHARD RADAR DIGEST



❖❖ Starting today, we're once again publishing pest predictions generated by the Univ. of Maine's Orchard Radar model estimation service, provided to us by Glen Koehler for Geneva. This pest management tool uses commercially available weather data as an input for apple pest occurrence and development models taken from many established university and practitioner sources. It's offered as another perspective on what's happening in the orchard to compare against our own record-generated advisories and, of course, personal observations from the field. We'll be printing only some of the short-term arthropod events; the full Orchard Radar product range covers disease and horticultural events as well. The public sites available for anyone to use are located at: http://pronewengland.org/Content/PROInfoDecisionModels.htm. Growers interested in exploring this service for their specific site may wish to contact Glen personally (gkoehler@umext.maine.edu).

Geneva Predictions:

Roundheaded Appletree Borer

RAB adult emergence begins: June 4; Peak emergence: June 18.

RAB egglaying begins: June 13. Peak egglaying period roughly: July 2 to July 17.

Lesser Appleworm

1st LAW flight, first trap catch expected: May 16; Peak trap catch: May 28.

Mullein Plant Bug

Expected 50% egg hatch date: May 17, which is 12 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 25.

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 15.

Oriental Fruit Moth

1st generation OFM flight, first trap catch expected: May 9.

Optimum 1st generation first treatment date, if needed: May 26.

continued...

IN THIS ISSUE...

Redbanded Leafrolloer
Peak trap catch and approximate start of egg hatch: May 10.

San Jose Scale
First adult SJS caught on trap: May 23.

Spotted Tentiform Leafminer
1st STLM flight, peak trap catch: May 17
1st generation sapfeeding mines start showing: May 22.
Optimum sample date is around May 28, when a larger portion of the mines have become detectable.

White Apple Leafhopper
1st generation WALH found on apple foliage: May 20.

Highland Predictions:
Roundheaded Appletree Borer
RAB adult emergence begins: May 26; Peak emergence: June 10.
RAB egglaying begins: June 5. Peak egglaying period roughly: June 25 to July 9.

Lesser Appleworm
1st LAW flight, first trap catch expected: May 5; Peak trap catch: May 18.

Mullein Plant Bug
Expected 50% egg hatch date: May 12, which is 6 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 21.

Obliquebanded Leafroller
1st generation OBLR flight, first trap catch expected: June 6.

Oriental Fruit Moth
1st generation OFM flight, first trap catch expected: May 15.
Optimum 1st generation first treatment date, if needed: May 29.

Redbanded Leafroller
Peak trap catch and approximate start of egg hatch: April 24.

San Jose Scale
First adult SJS caught on trap: May 12.

Spotted Tentiform Leafminer
1st STLM flight, peak trap catch: May 3.
1st generation sapfeeding mines start showing: May 10.
Optimum sample date is around May 17, when a larger portion of the mines have become detectable.

White Apple Leafhopper
1st generation WALH found on apple foliage: May 9.

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PONDERING PINK

COLD LIGHT OF DAY
(Art Agnello,
Entomology, Geneva)

❖❖ So far, the 'gradual spring warm-up' we've been admiring for the past month or so might seem to have gotten cold feet, as the trees are mostly just inching along towards the pink and (eventually) bloom stages of development. However, I'm a firm believer in the theory of All Things Evening Out Eventually, which is a nice way of saying that a little anxiety about a sudden surge forward could be a good thing once we start getting into a few days and nights above the 40's. This should happen later in the week, and most insects depend more on metabolism than on their tiny brains in matters of emergence, feeding and oviposition. This sort of scenario can result in too many pest management decisions needing to be made in too short a time to act on them, so a brief assessment of where we stand might be useful at this point.

The potential pests of most concern just now are probably rosy apple aphid (RAA), oriental fruit moth (OFM), and tarnished plant bug (TPB), with European apple sawfly and plum curculio leering in the wings. Similar to last year, it doesn't look like OFM will be appearing very early this season — it can fly during the last week of April in WNY if we get an early spring. We jumped the gun and wasted a pink spray in some of our 2004 research plots, because the flight didn't start until bloom, and we would have been just as well off dealing with 1st generation populations in problem orchards during the petal fall window. I would guess that most growers shouldn't need to resort to special pink sprays against this pest this year either; depending on your priorities and the time available, you could put up 1 or 2 traps in orchards with a history of internal worm infestations, and check them until pink bud to be sure there's no great flush of moths flying that would encourage you to consider such a spray.

According to your personal philosophy, RAA and TPB can be either perennial frustrations, curious but non-fatal occurrences, or else a complete flip of the coin. Do you have them, need to treat for them, are you able to control them if you do, or does it matter if you don't? These pests also have been slow to marshall their forces this season. It's possible to scout for rosies at pink, but this is often not practical, given all the other hectic activity at that time; TPB is not a good candidate for scouting, and if the bloom period is prolonged by cool, wet weather, a pink spray is of little use. If RAA is your main concern, you could elect a pink spray IF you have the luxury of a suitable application window.

However, if you think it's justified to go after both of these pests, a newly available option would be to apply Assail during bloom at the 2.5-oz rate. Its labeled use in apples covers this use, provided you avoid spraying when bees are actively foraging (NOTE: the mention of this option in the April 18 Scaffolds article on TPB made it look like it's labeled in stone fruits; it is not, and I apologize for the poor wording). The ability to time this spray closer to the susceptible period of the newly set fruitlets should do a much better job of controlling both species than anything applied at pink, and it can go in the tank with most scab materials you might be using at bloom. Assail won't do too much for any PC that have made it into your trees during the bloom period, but it does have good activity against EAS, if you have been experiencing difficulty getting early enough protection from this pest. ❖❖

DISEASES

FUZZY FOE

OPTIONS FOR CONTROLLING POWDERY MILDEW ON APPLES

Dave Rosenberger, Plant Pathology, Highland)

❖❖ The fungus that causes powdery mildew on apples overwinters in infected apple buds and then colonizes new tissue as leaves and shoots emerge in spring. Flower clusters and terminal shoots that develop from infected buds support the primary infections that produce conidia for secondary spread to other leaves and fruit. Primary infections appear as white powdery deposits on malformed flower clusters (Fig. 1) and terminal leaves (Fig. 2). These primary infections become visible sometime between the tight cluster and pink bud stages.

Fig. 1. Primary mildew on an infected cluster (right) as compared to a healthy cluster (left).

Mildew infections on fruit cause net-like russetting similar to that attributable to phytotoxicity from prebloom copper sprays. Fruit russetting usually results from mildew infections prior to petal fall, so pink sprays may be needed to prevent mildew fruit russetting. Under New York conditions, however, fruit infections are relatively uncommon and seem to occur only in high-inoculum orchards of susceptible cultivars, and then only in years that are unusually

Fig. 2. Primary mildew on a terminal shoot creates white "flag shoots."

favorable for mildew development. In New York, mildewcide sprays are needed primarily to protect new leaves that are formed during the spring growth flush that begins during bloom and often extends into late June.

Fungicide options for controlling mildew include sulfur, the strobilurin fungicides (Sovran, Flint), the SI scab fungicides (Nova, Rubigan, Procure), or the SI mildewcide (Triadimefon). Triadimefon is a generic substitute for Bayleton, which is no longer marketed for tree fruits. Mildew is NOT controlled by dodine, captan, Vangard, Scala, Polyram, or the mancozeb fungicides. Benlate and Topsin M may still control mildew in some orchards, but mildew is resistant to these benzimidazole fungicides in most orchards.

Sulfur has only protectant activity against mildew, and it therefore must be in place on new tissues before mildew infections occur. Where sulfur is used as the primary protection against mildew, the sulfur sprays should be initiated at tight cluster, at

continued...

about the same time that the first signs of primary mildew infections appear in trees.

Sovran and Flint work both as protectants and anti-sporulants. They provide effective mildew control if they are applied beginning at pink or bloom. If no mildewcides are applied until petal fall, however, Sovran and Flint are not the best choices for initiating mildew control because they do not provide enough post-infection activity to arrest mildew infections initiated during bloom.

The SI fungicides are extremely effective against apple mildew because they provide post-infection and antisporulant activity. In orchards with light to moderate mildew pressure, the SI fungicides have provided excellent mildew control when applied at petal fall and first cover even if no other mildewcides were applied prior to petal fall. However, omitting mildewcides prior to petal fall and then using the SI's to "clean up" the problem may increase selection pressure for SI-resistant strains of powdery mildew. In recent years, we have recommended that mildewcide sprays be started at pink or bloom so as to minimize selection pressure for SI resistance, but no one really knows if apple powdery mildew is capable of developing resistance to full label rates of SI fungicides. In some orchards, low rates of triadimefon (Bayleton) and other SI fungicides no longer control mildew like they did when those products were introduced in the 1980's. However, I am not aware of any orchards where mildew cannot be controlled when SI fungicides are used at higher labeled rates. It is possible that the mildew fungus may be incapable of overcoming high rates of SI fungicides.

In orchards where SI fungicides are no longer effective for controlling apple scab, Triadimefon 50W at 3–4 oz/A can be mixed with Polyram, mancozeb, or captan in bloom, petal fall and first cover sprays to control mildew and cedar-rust diseases. When triadimefon was first introduced as the active ingredient in Bayleton, rates as low as 1.5 oz/A of the 50W formulation provided good mildew control. Because of the shift toward SI resistance, 4 oz/A of Triadimefon may now be needed to ensure good mildew control in many orchards. Even at this higher rate, Triadimefon may be less expensive than the other SI fungicides. Because triadimefon never had any scab activity, using this mildewcide should not have any stimulator effect on SI-resistant apple scab, even though triadimefon is in the SI chemistry group.

None of the mildew fungicides will completely eradicate powdery mildew from terminal shoots that had primary infections, although the SI fungicides may suppress symptoms on some leaves on shoots that are carrying primary infections. The objective of mildewcide sprays is to prevent secondary infections. Good mildew control during 2005 will reduce the number of primary infections for 2006, but don't expect sprays in 2005 to eliminate the primary infections or "flag shoots" that resulted from poor mildew control during the 2004 season.

In orchards that contain mildew-susceptible apple cultivars, a mildewcide should always be included in at least the petal fall and first cover sprays, even if inoculum pressure is very low. Mildew control programs initiated after first cover are almost always ineffective.

Two or three applications of mildewcide may be sufficient to suppress mildew for the entire season if inoculum levels are low. However, four to six applications may be needed to protect highly susceptible cultivars and/or young orchards where shoot growth continues into mid-summer. Low rates of sulfur fungicides (2–3 lb/A) can provide economical protection of new terminal leaves during summer if strobilurin or SI fungicides are used to control mildew during the period between bloom and first cover. ❖❖

IT'S IN THE BAG

AVOIDING FRUSTRATING AND EXPENSIVE SPRAY GLITCHES

(Dave Rosenberger, Plant Pathology, Highland)

Caution #1: Attempting to apply foliar boron and pesticides packaged in water-soluble bags as a tank mix can result in clogged strainers, endless frustrations, and potentially lethal rises in blood pressure on the part of the sprayer operator if the mixing is done incorrectly! Boron complexes with water-soluble packaging and prevents the packaging from dissolving completely. The common result is a sticky goo that clogs strainers and is difficult to clean up.

If foliar boron sprays must be applied at the same time as pesticides in water-soluble bags, the water-soluble bags should always be dissolved completely before boron is added to the spray solution. Once the bags are dissolved, boron can be safely added to the mix: The dissolved bags will not precipitate if they are fully dissolved before the boron is added.

Some growers have reported that the small amount of water left in the sprayer pump and pipes after a boron spray is applied may carry enough boron to interfere with the dissolving of water-soluble bags when the sprayer is refilled. Thus, sprayers must be completely emptied after a boron spray before water-soluble bags are added to a new tank of water. Alternatively, it may be necessary to dissolve the water-soluble packets in an external feed tank, then add the resulting pesticide solution to the sprayer tank that is being used to apply the pesticide-boron mixture.

Caution #2: Over the past few years, I have seen quite a few orchards where foliar zinc sprays applied just before or after bloom have caused phytotoxicity to apples (fruit russetting; Fig 1) and plums (defoliation). Fully chelated zinc EDTA has been recommended and used for many years without causing phytotoxicity. Problems have occurred, however, when growers have opted for less expensive formulations of zinc that apparently contain small amounts of non-chelated zinc. "Cheaper" foliar zinc products may prove quite expensive at the end of the season if they cause phytotoxicity. Be wary of zinc products that contain zinc oxide in any form. ❖❖

Fig. 1. Fruit russetting on McIntosh caused by a foliar spray of non-chelated zinc.

PEST FOCUS

Highland:
1st **European red mite** observed 4/26. 1st **lesser appleworm** caught today. **San Jose scale** model degree days (base 50°F) *since March 1 = 161.6.*

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	4/25	4/28	5/2
Redbanded leafroller	1.4	1.7	15.8
Spotted tentiform leafminer	1.2*	0.0	0.8
Oriental fruit moth	0.0	0.0	0.0
Lesser appleworm	0.0	0.0	0.0

Highland, NY

	4/26	5/2
Green fruitworm	0.1	0.2
Redbanded leafroller	3.5	11.0
Spotted tentiform leafminer	11.1	46.2
Oriental fruit moth	0.3	0.2
Lesser appleworm	0.0	0.2*

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–5/2):	235.6	107.4
(Geneva 1/1–5/2/2004):	292.8	148.7
(Geneva "Normal"):	279	128
(Geneva 5/9 Predicted):	294	137
(Highland 1/1–5/2):	327.3	161.9

Coming Events:	**Ranges(Normal± StDev):**	
Comstock mealybug 1st gen. crawlers	215–441	80–254
European red mite egg hatch	231–337	100–168
Oriental fruit moth 1st catch	202–382	78–204
Lesser appleworm 1st catch	239–537	104–286
Rose leafhopper nymphs on multiflora rose	239–397	96–198
STLM 1st flight peak	250–408	112–210
Green apple aphid present	111–265	38–134
Rosy apple aphid nymphs present	134–244	56–116
Obliquebanded leafroller larvae active	158–314	64–160
Pear psylla 1st egg hatch	174–328	60–166
McIntosh at bloom	348–422	171–221
Red Delicious at pink	300–384	140–186
Peach at pink	187–251	78–118
Pear at bloom	301–397	145–203
Plum at bloom	266–364	122–190
Sweet cherry at petal fall	338–426	168–226
Tart cherry at bloom	303–395	145–211

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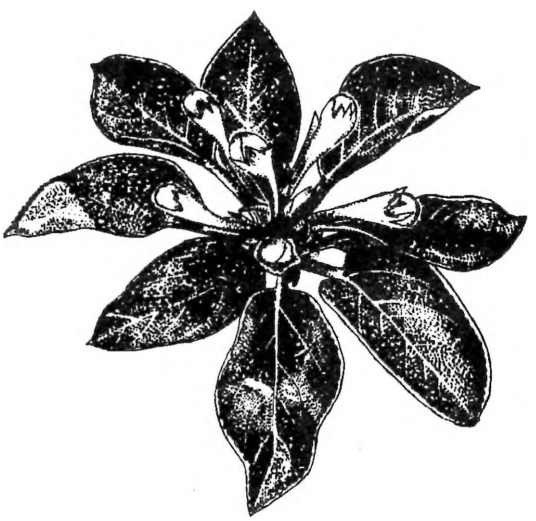
PHENOLOGIES

Geneva:
Apple (McIntosh): Early pink
Apple (Red Delicious): Tight cluster
Apple (Empire): Tight cluster
Sweet cherry: Bloom
Tart cherry (Mont.): White bud
Pear: White bud
Plum: White bud
Peach: 1/2 inch green

Highland:
Apple (McIntosh): 50% bloom
Apple (Red Delicious): King bloom
Apple (Empire): King bloom
Sweet cherry: Petal fall
Apricot: Petal fall
Pear: Bloom
Plum: Bloom
Peach(early): Petal fall
Peach(late): Late bloom



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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