scaffolds Update on Pest Management and Crop Development

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DISEASES

THE BURNING QUESTION

SUMMER SPRAY PROGRAMS FOR APPLE ORCHARDS WITH SCAB

(Dave Rosenberger, Plant Pathology, Highland)

❖❖ Apple scab became established this year in some New York orchards where growers ignored the first scab infection period. In the Hudson Valley, this critical infection period occurred April 1–2, just three days after trees reached the green-tip bud stage. Scab did not develop in orchards that were sprayed before the first infection period or in orchards where SI fungicides (Rubigan, Nova, or Procure) were applied within 96 hours after the infection period. It is not clear why the green-tip infection period caused such a high rate of infection in orchards that were considered relatively scab-free last year.

Where primary scab was evident on cluster leaves, we suggested that growers apply either captan alone and a combination of captan with an SI fungicide (See the April 27 issue of *Scaffolds*). Efforts to prevent apple scab from infecting additional new leaves and fruit have been aided by 10 days of dry weather in the Hudson Valley, including several days when temperatures exceeded 85°F. The combination of captan sprays plus temperatures above 80°F has proven exceptionally effective in arresting previous scab epidemics, and it appears to be working again this year. (I could not determine from the published literature if there is really a synergy between captan and hot weather, or if their effects on scab epidemics are purely additive.)

A common question arises after fungicides have been applied to scabby orchards: "How does one know when the scab has been 'burned out' or eradicated?" Unfortunately, the macroscopic appearance of a scab lesion is not a reliable indicator of lesion viability. Scab lesions sprayed with Benlate (benomyl), Topsin-M (thiophanate-methyl), Syllit (dodine), or SI fungicides sometimes develop a reddish-brown appearance that has been viewed as evidence that the lesion has been inactivated or eradicated. Until fungicide-resistant strains of apple scab appeared in orchards, multiple applications of Benlate, Topsin-M, and Syllit almost always caused lesions to develop this 'burned-out' appearance. However, laboratory studies showed that apple scab remained viable in some of these lesions despite their appearance. Applications of SI fungicides or captan frequently cause less visual changes in the appearance of scab lesions, but spore production and spore viability is still reduced by 75–90% in lesions that received multiple applications of these fungicides.

Spore production in untreated scab lesions tends to slow down about four weeks after the individual lesion first appeared. Thus, scab lesions that appeared on cluster leaves during the first week of May will have nearly finished producing conidia by the first week of June even if fungicides did not completely eradicate the scab fungus. In orchards where no new infections are evident on younger leaves or on fruit, the period of peak risk has passed and one can assume that the protective measures applied during May were effective. A slightly more relaxed fungicide program can be adopted through sum-

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mer after the newest scab lesions are at least 4 weeks old. In such orchards, growers may wish to revert to mancozeb sprays until the 77-day preharvest interval is reached, then resume their usual summer fungicide program. However, if additional scab infections appeared on terminal leaves during the past week or two, captan cover sprays containing at least 0.75 lb active ingredient per 100 gallons of dilute spray should be maintained at 10–14 day intervals until the youngest scab lesions are at least four weeks old.

No fungicide treatment is 100% effective for eradicating primary infections or for arresting the development of conidia. Therefore, orchards where primary scab became established before bloom will require special monitoring throughout the remainder of the year so that new lesions can be detected as soon as they appear. Scab is unlikely to spread extensively during summer unless the weather is unusually cool and wet, but scab sometimes becomes active again during late summer, especially if the weather during late summer and early fall is unusually wet. If scab becomes active in August, an additional late-August or early-September fungicide spray may be needed to prevent development of pinpoint scab on fruit.❖❖

PEST FOCUS

Geneva: Degree days (base 50°F) from 1st **codling moth** catch (5/7) = 247. Control sprays for **plum curculio** are no longer necessary whenever the last spray has been applied within 10–14 days after 340 DD_{50} have accumulated since McIntosh petal fall (5/11). 208 DD_{50} have accumulated since then.
1st **pandemis leafroller** trap catch. (This usually precedes the first **obliquebanded leafroller** trap catch by 0–4 days.)

Highland: Degree days (base 50°F) from 1st **codling moth** catch (5/4) = 277. DD_{50} since McIntosh petal fall (5/4) in the Hudson Valley, for use in **plum curculio** spray decision = 277. **Spotted tentiform leafminer** tissue feeding observed. **Rose leafhopper** adults observed on apple. 1st **obliquebanded leafroller** trap catch.

NEW RECORD?

INSECT BITES
(Art Agnello, Entomology, Geneva)

INSECTS

OBLIQUEBANDED LEAFROLLER

❖❖ We just received our first report of an adult Obliquebanded Leafroller catch in the Hudson Valley. None have been caught yet in western N.Y., but it won't be too much longer before the first moths start showing up, considering this spring's warm trend. As usual, larvae can be found now in many stages of development, from the very tiny to the pupal stage in some of the more advanced sites. This would obviously be an advisable time to hang a wing-type pheromone trap in problem apple blocks, to fix the date of first emergence in your specific area. Recall that we recommend sampling at 600 DD (base 43°F) after the first adult catch, to determine the need and timing for treatment. It pays to keep an eye on the daily highs and lows for your area if you are doing your own trapping, as it's assured that our "normal" sampling date of July 5 will turn out to be too late this year.

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Larvae of the first OBLR summer brood cause two kinds of damage — foliar feeding injury and rolling of the leaves, and more importantly, injury caused by feeding on the surface of the developing fruits. This fruit damage is usually more serious than the spring feeding by overwintered larvae, because more of the fruit injured late in the season remains on the tree at harvest. Despite the rather extreme measures some growers wage in the spring against the early generation larvae, you should remember that even an excellent control program against the overwintered brood does not eliminate the possibility of a problem summer population. To maximize the effectiveness of any sprays against the first summer generation OBLR infestation, you should sample leaf and fruit clusters at the proper time. The value of knowing the precise date of first adult flight on your own farm cannot be emphasized too strongly, and maintaining a few pheromone traps is not terribly difficult or time consuming. Check traps two or three times a week until the first adult is caught. Wait for 600 degree-days (43 °F base) after this date to begin sampling for 2nd- or 3rd-instar larvae. Degree-day (DD) values can be obtained for some locations from NEWA (Northeast Weather Association) or from Cooperative Extension service letters. Most conveniently, you can also just look them up in the DD charts that appear on pp. 109–112 in the 1998 Recommends by using the daily high and low temperatures, or else estimate them each day by using the following formula:

Degree Days for 1 Day = 1/2 x [Daily Maximum Temp. + Daily Minimum Temp.] - 43.

Guidelines for sampling can be found on pp. 84, 92–93, 96 and 101 of the Recommends. Sample from random trees that are representative of the entire block, examining 10 expanding leaf terminals per tree. It is not necessary to pick the terminals. Record the number of samples infested with live larvae; do not count actual numbers of larvae in an infested terminal, and do not count damaged terminals that have no OBLR in them, or those containing only dead OBLR. To minimize bias, choose half of your samples from inside the tree canopy, including some watersprouts, and the other half from near the outside of the canopy. If the tree is more than 10 ft tall, try to include some clusters from the mid- to upper canopy area. Use the 3% infestation threshold for fresh fruit, and 10% for processing fruit. A "Stop Sampling and Treat" decision means that a spray to control OBLR is recommended at this time. A "Stop Sampling, Don't Treat" decision indicates that you should return in 3–5 days, after 100 more degree-days have accumulated, and repeat the sample. Recommended materials include a B.t. product (such as Dipel, Biobit, Javelin, Agree, etc.), Lorsban, Lannate, or possibly Asana or Penncap-M, depending on the population pressure, field history, and resistance/tolerance particulars of your orchards.

If you plan on using Confirm as a seasonal control material this summer, the preferred strategy is to forgo the sampling and make three applications based on DD accumulation (base 43°F) after the first sustained moth catch. The recommended application timings are: 200–300 (about 5–7 days after first catch), 500–600, and 800–900 after first catch of adults.

CHERRY FRUIT FLIES

No adults have been reported caught on sticky board traps yet, but because of the zero tolerance in cherries for insect damage or presence, it's prudent to begin sprays in your cherries now (for this pest as well as for curculio). Guthion, Imidan (tart cherries only), Sevin, the synthetic pyrethroids, or Penncap-M are all effective treatments. Sevin, Imidan and Penncap-M will also control black cherry aphid.

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LESSER PEACHTREE BORER

Remember to get your trunk and scaffold sprays on peaches and cherries during the first week of June if borers are a problem in your blocks. This pest increases the severity of Cytospora canker infections in peaches and is often found within the canker; by feeding in the callous tissues, it interferes with the tree's natural defenses against the disease. Infestations can be determined by the presence of the insect's frass, which resembles sawdust, in the gum exuded from the wound. In peaches, you can use Lorsban, Thiodan, Asana, Ambush, Pounce, or Penncap-M for this application. In cherries, use Lorsban 4E, Thiodan 50WP, Asana, or Ambush 25WP as a trunk spray ONLY; do not spray the fruit.

LEAF WEEVIL

This is about the time of year that a bright metallic green snout beetle about 1/5" in length appears in apple orchards and strawberry fields, sometimes in considerable numbers. This weevil is most likely *Polydrusus impressifrons*, also called simply the leaf weevil. It is of European origin and was first reported in New York in 1906. The larvae live in soil, where they feed on roots of various plants. The adult weevils feed on the foliage of many host plants, including birch, poplar, and willow, but also apple, pear, and strawberry. Leaf feeding is usually not extensive enough to justify special sprays. In commercial orchards, the normal cover spray program will take care of this problem. If the weevil appears in great numbers in a nursery, control using an OP may be necessary.❖❖

NOT SO SWEET

A ROSE (LEAFHOPPER) BY ANY OTHER NAME...

(Peter Jentsch & Dick Straub, Entomology, Highland)

❖❖ Leafhoppers, owing to the mild Hudson Valley winter, have fared well and are presently in the latter stage of their first generation. Nymphs of white apple leafhopper (WALH) *Typhlocyba pomaria* McAtee, and potato leafhopper *Empoasca fabae* (Harris), two of the three predominant species that feed on apple, have been found in the Hudson Valley. As with many of the insects, they follow suit with the early spring apple phenology we are experiencing.

WALH over wintered in the egg stage within the young twigs of apple. They have since hatched and are feeding on cluster and mature leaves of apple, causing the typical white stippling associated with leafhopper feeding injury. They are in their 4th to 5th instar in Hudson Valley orchards and more numerous in orchards that have not applied efficacious insecticides or in those where Sevin was not used at thinning.

A third leafhopper species that has alternate host ecology is the rose leafhopper (RLH) *Edwardsinia rosae* (Linnaeus). It migrates from neighboring hosts, primarily from wild rose, to apple in the late spring to lay eggs. It then completes one to two generations on apple before returning to rose to overwinter during autumn. By scouting in July and August, the differences between species can be noted once the nymphs have reached third instar, when their wing pads can be observed. Dark spots at the bases of setal hairs can be seen on the thorax of the RLH, whereas the WALH lacks spots. Recent findings have shown the rose leafhopper to begin its migration to apple at the time florabunda rose is in bloom stage (approx. 700 DD +/- 50 @ 48 °F). In the Hudson Valley this will occur this week (Adults were found on apple May 26th).

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The application of persistent efficacious insecticides against the adult migratory population has been shown to reduce egg laying and thus reduce the second and third generation of RLH. Organophosphate insecticides (azinphos-methyl, Guthion; phosmet, Imidan) have little effect on any of the leafhoppers. If RLH is a mid–late season pest in particular blocks, then an application prior to RLH migration may prove cost-effective. Provado and Sevin are effective on adults of both WALH and RLH in reducing succeeding generations. Both of these materials, when used at the recommended insecticidal rates, will control adults over the migration period of approximately two weeks. They are relatively safe to the predatory mite complex, and also pollinators if the XLR formulation of Sevin is used.❖❖

PRETTY CHEESY

INCOMPATIBILITY ALERT

❖❖ Word comes from Dan Gilrein on Long Island, from a conversation with the BASF representative, that a western grower had apparent incompatibility problems with Pyramite and NuFilm, a spreader-sticker manufactured by Miller Chemical. Apparently, 1 pt of NuFilm/ 100 gal plus 13.2 oz Pyramite (probably on pears) resulted in a "white-grey cottage cheese-like" sticky residue."❖❖

CHEM NEWS

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1- 5/26):	829	488
(Geneva 1997 1/1-5/26):	420	189
(Geneva "Normal" 1/1-5/26):	581	308
(Highland 1/1-5/26):	998	584

Coming Events(Geneva):	**Ranges:**	
Obliquebanded leafroller 1st catch	686–1104	392–681
Black cherry fruit fly 1str catch	686–985	392–636
Cherry fruit fly 1str catch	650–1500	368–961
Pear psylla 1st summer adults present	759–864	443–512
Pear psylla 2nd brood hatches	992–1200	609–763
1st rose leafhopper adult on apple	736–1104	384–658
STLM 2nd flight begins	795–1379	449–880
European red mite summer eggs hatch	773–938	442–582
Lesser appleworm 1st flight subsides	818–1548	444–999
Oriental fruit moth 1st flight subsides	781–1574	442–1026
San Jose scale 1st gen. crawlers present	987–1247	569–784

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	5/18	5/21	5/26
Spotted tentiform leafminer	56.0	17.3	2.2
Redbanded leafroller	1.0	1.7	0.1
Oriental fruit moth (apple)	1.5	0.8	0.6
Lesser appleworm	23.2	8.8	1.9
Codling moth	5.7	29.7	6.5
San Jose scale	214	60.3	0.7
American plum borer	3.3	3.0	2.5
Lesser peactree borer	5.3	5.2	6.1
Peachtree borer	2.3	2.7	0.7
Pandemis leafroller	-	-	0.9*
Obliquebanded leafroller	-	-	0

HVL, Highland, NY

	5/11	5/18	5/26
Pear psylla eggs/leaf	2.1	15.1	145
Pear psylla nymphs/leaf	0.3	1.8	3.3
Spotted tentiform leafminer	7.4	4.1	1.6
Redbanded leafroller	2.3	1.1	0.1
Oriental fruit moth	1.0	0.9	0.4
Lesser appleworm	0	0.4*	0.1
Codling moth	0.1	0.9	2.3
Obliquebanded leafroller	0	0	0.1*

* 1st catch

(Dick Straub, Peter Jentsch)

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