scaffolds Update on Pest Management and Crop Development

FRUIT JOURNAL

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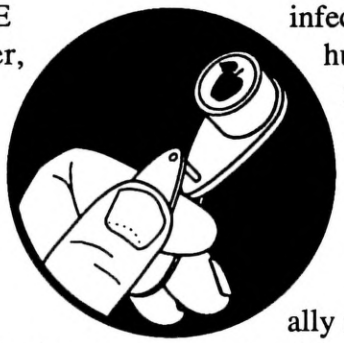
DISEASES

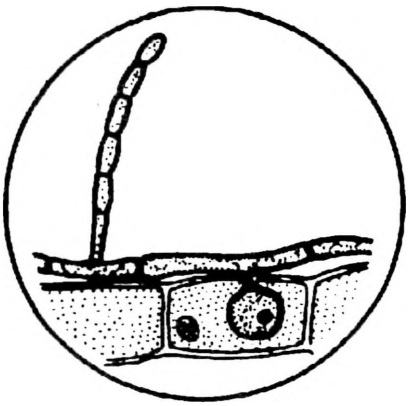
NO DAMP GOOD

DISEASE UPDATE
(Dave Rosenberger, Plant Pathology, Highland)



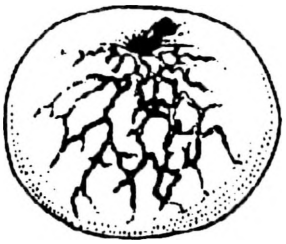
Powdery Mildew

❖❖ Powdery mildew on apples is more prevalent throughout eastern New York this year than anytime in the recent past. Primary mildew infections appear as snow-white shoots that contrast sharply with the normal green foliage. Primary infections develop from buds that became infected last summer and carried the mildew fungus through winter. As these buds begin to grow in spring, the mildew fungus grows with the shoot and colonizes each new leaf. The white powder on the surface of these infected leaves consists of fungal mycelia and conidia.



Mildew conidia produced in primary infections are carried by wind to other leaves, where they cause secondary infections. Unlike most of the other fungal pathogens on apples, the powdery mildew fungus does not need rain either to disperse spores or to infect new leaves. Mildew infections can occur anytime that relative humidity is >70% with temperatures >50°F. Rains may actually have an adverse effect on mildew because rains wash spores out of the air and off of leaves.

Secondary mildew infections usually appear as white spots about the size of a dime or quarter on the underside of recently expanded terminal leaves. On susceptible cultivars, secondary infections may expand to cover entire leaves. Infections are initiated only on newly expanding leaves. The secondary mildew cycle is arrested when terminal growth ceases and the fungus can no longer find young leaves to infect. Mildew can infect fruit during



the pink and early bloom stages. Mildew causes russetting on fruit, but it will not infect fruit after petal fall. Mildew is unusually severe this year because the long, cool summer last year kept terminal shoots growing late into the fall after most growers stopped applying any mildewcides. Also, we had a fairly mild winter, so most mildew-infected buds survived the winter.

Effective mildewcides include wettable sulfur and the SI group of fungicides (Bayleton, Nova, Rubigan, Procure). Benlate and Topsin M

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may work in some orchards, but many orchards have strains of mildew that are resistant to Benlate and Topsin M. (Benzimidazole-resistant mildew may be most common in orchards that were planted in the late 1970's and early 1980's, because both nurseries and growers were relying almost totally on the benzimidazole fungicides for mildew control during that time period before SI fungicides became available.)

Mildewcide sprays are applied primarily to prevent secondary infections. None of the fungicides will totally "clean up" primary infections. Leaves that are white now will stay white all season. When SI fungicides are used at 10-day intervals, they can prevent invasion of newly unfolding leaves on the ends of terminals with primary infections, but as soon as the SI applications stop, the mildew will appear again on young leaves.

Mildew is best controlled by applying one of the SI fungicides at bloom, petal fall, first cover, and second cover. Obviously, those who are only now discovering the problem have probably omitted mildewcides in some or all of their sprays this season. Where extensive mildew is showing up in susceptible cultivars, several SI sprays should still be applied to slow the epidemic during the period of the terminal shoot growth flush. Use full rates of the SI fungicides. Bayleton will not provide adequate control of a running mildew epidemic when used at the lowest labelled rate. Bayleton should be applied at a rate of 1.0 to 1.5 oz/100 gallons. During late June and early July, mildew can be suppressed by applying 3–5 lb of wettable sulfur per acre in cover sprays. Young non-bearing trees may need to be protected throughout the summer because these trees often fail to set terminal buds until mid- or late August.

Growers with Ginger Gold trees should be forewarned that mildew is to Ginger Gold as apple scab is to Jerseymac. In other words, Ginger Gold is extremely susceptible to mildew and will require extra care in severe mildew years.

Fire Blight

Blossom blight infections that resulted from the "high risk" period predicted by MaryBlyte for May 19–20 showed up right on schedule about June 5th. One Hudson Valley pear grower who applied streptomycin May 20 and May 26 found numerous blossom blight infections on Bosc pears around several "hot spots" adjacent to trees that had blight and were removed last year.

When fire blight appears in an orchard in early June, the perennial question is how to handle the problem for the rest of the summer. The traditional answer is to monitor the orchard and cut out new strikes as they appear. This is frequently a daunting and discouraging task, but it is the only way to save pear orchards and young orchards of susceptible apple cultivars. As long as trees are actively growing, fire blight will continue to spread to new shoots and cankers will continue to enlarge. The seasonal advance of fire blight within an orchard will be fully arrested only when the trees stop growing in mid-summer or fall. Monitoring and cutting out fire blight may not be cost-effective on mature

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apple trees, especially if the affected trees are low in vigor, if the season is dry (as this one appears to be to date), or if trees are carrying a heavy crop that will reduce the vigor of terminal shoots.

In pears and in vigorous apple trees, infections that are not removed promptly spread into older wood and result in extensive losses of scaffold limbs and/or entire trees. At the same time, the blight strikes contribute inoculum for infecting additional terminal shoots. Thus, monitoring and pruning out infected shoots twice weekly during June is important, both for limiting extension of the existing infections and for eliminating inoculum that would otherwise contribute to further spread within the orchard.

When blight appears in an orchard, the most critical job is to cut out strikes as quickly and as efficiently as possible. Until recently, plant pathologists recommended disinfecting pruners between cuts and removing all the blighted material from the orchard. There is still some disagreement about the importance of these practices, but I doubt that disinfecting pruners and removing prunings have much impact on the course of the epidemic so long as pruning is done in dry weather. (Removal of strikes should never be done when trees are wet or when relative humidity is high.) Blighted branches left on the ground dry out quickly and cease to act as a source of inoculum within several hours. Larger limbs should be placed between trees within the row where they will not become tangled in sprayers or mowers that might drag them through the orchard.

Cuts should be made at least 18 inches below the visible edge of the cankers. When removing scaffolds or other large limbs, leave 8-inch stubs that can later be converted to flush cuts during winter pruning. Frequently, small cankers do form around cuts as they heal, but these do not move very far in old wood. By leaving stubs that are removed during winter, the small cankers that might form around fresh cuts can be safely removed during dormant pruning.

In some cases, it may be more cost-effective to remove scaffold limbs or entire tops of trees using a chain saw instead of making hundreds of small cuts. "Death by a thousand cuts" is ultimately much more expensive than early removal of entire sections of trees that are severely affected. Those who attempt to remove the minimum amount of wood must often make repeated cuts on subsequent visits and ultimately end the season with the same amount of tree left in place as those who make aggressive cuts on the first trip through the block after fire blight appears. However, I discourage growers from completely removing pear trees because replacements take a long time to reach bearing age. Severely affected pear trees, even old trees that have trunks >15 inches in diameter, can be cut back to 4-ft stumps and will regenerate nicely within several years if fire blight can be arrested and eventually eliminated from the orchard.

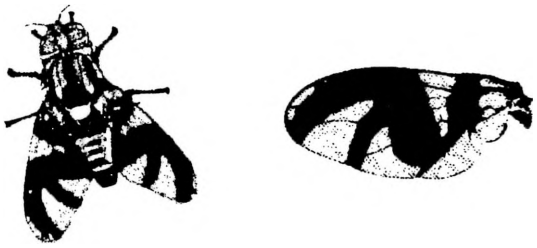
Once infections appear in an orchard, the fire blight bacteria are spread by wind and splashing rain. The bacteria infect succulent terminal shoots through abrasions that occur during windy rains, especially thunderstorms. Potato leafhopper may also contribute to spread and/or infection processes. Some growers have questioned whether applying low rates of copper fungicides at regular intervals (7–10 days) through summer might reduce inoculum levels and protect against further infection of terminal shoots. Unfortunately, I'm not aware of any copper sprays labeled for summer applications to control fire blight, and there has not been enough research to show whether summer copper sprays would be beneficial. Furthermore, copper fungicides applied during June almost always cause some phytotoxicity to fruit (russetting and lenticel blackening). Thus, the primary control for fire blight during summer is still vigilant removal of infected shoots as they appear.❖❖

INSECTS

FLIES TIME

APPLE MAGGOT
(Art Agnello,
Entomology, Geneva)

❖❖ It will soon be time to expect the first appearance of these adults (which are flies) in abandoned orchards, particularly in eastern N.Y. (western N.Y. should be a couple of weeks from now if all goes normally). Crop scouts and consultants have been using traps to monitor apple maggot (AM) populations for a long time. Some orchards have such high AM populations that monitoring for them is a waste of time; that is, sprays are needed predictably every season, and on a calendar basis. But most commercial N.Y. orchards have moderate or erratic pressure from this pest, and monitoring to determine when damaging numbers of them are present can reduce the number of sprays used in the summer with no decrease in fruit quality.



Sticky yellow panels have been in use for over 20 years, and can be very helpful in determining when AM flies are present. These insects emerge from their hibernation sites in the soil from mid-June to early July in New York, and spend the first 7–10 days of their adult life feeding on substances such as aphid honeydew until they are sexually mature. Because honeydew is most likely to be found on foliage, and because the flies see the yellow panel as a "super leaf", they are naturally attracted to it during this early adult stage. A few of these panels hung in an orchard can serve as an early-warning device for growers if there is an AM emergence site nearby.

Many flies pass this period outside of the orchard, however, and then begin searching for fruit only when they are ready to mate and lay eggs. That means this advance warning doesn't always have a chance to take place — the catch of a single (sexually mature) fly then means that a spray is necessary immediately to adequately protect the fruit. This can translate into an undesirable risk if the traps are not being checked daily, something that is not always possible during a busy summer.

To regain this time advantage, researchers have developed newer traps that have the form of a "super apple" — large, round, deep red, and sometimes even with the smell of a ripe apple — in an attempt to catch that first AM fly in the orchard. Because this kind of trap is so much more efficient at detecting AM flies when they are still at relatively low levels in the orchard, the traps can usually be checked twice a week to allow a one- or two-day response period (before spraying) after a catch is recorded, without incurring any risk to the fruit. In fact, research done in Geneva over a number of years indicates that some of these traps work so well, it is possible to use a higher threshold than the old "one fly and spray" guidelines recommended for the panel traps. Specifically, it has been found that sphere-type traps baited with a lure that emits apple volatiles attract AM flies so efficiently that an insecticide cover spray is not required until a threshold of 5 flies per trap is reached.

The recommended practice is to hang three volatile-baited sphere traps in a 10- to 15-acre orchard, on the outside row facing the most probable direction of AM migration (south, or else toward woods or abandoned apple trees). Then, periodically check the traps to get a total number of flies caught; divide this by 3 to get the average catch per trap, and spray when the result is 5 or more. In home apple plantings, these traps can be used to "trap out" local populations of AM flies by attracting any adult female in the tree's vicinity to the sticky surface of the red sphere before it can lay eggs in the fruit.

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Research done in Massachusetts suggests that this strategy will protect the fruit if one trap is used for every 100–150 apples normally produced by the tree (i.e., a maximum of three to four traps per tree in most cases).

A variety of traps and lures are currently available from commercial suppliers; among them: permanent sphere traps made of wood (from Gemplers Pest Management Supply) or stiff plastic (from Great Lakes IPM or Gemplers Pest Management Supply), disposable sphere traps made of flexible plastic (from Olson), and sphere-plus-panel traps (from Ladd). The disposable traps are cheaper than the others, of course, but only last one season. Ladd traps are very effective at catching flies, but are harder to keep clean, and performed no better than any other sphere trap in field tests. Brush-on stickum is available to facilitate trap setup in the orchard. Apple volatile lures are available from Ladd Industries (septa) and Consep (membranes). Addresses of these suppliers follow:

- Consep, Inc., 213 S.W. Columbia St., Bend, OR 97702-1013, 1-800-367-8727
- Gemplers Pest Management Supply, P.O. Box 270, Blue Mound Rd., Mount Horeb, WI 53572, 1-800-272-7672
- Great Lakes IPM, 10220 Church Road NE, Vestaburg, MI 48891, 1-800-235-0285
- Ladd Research Industries, Inc., P.O. Box 1005, Burlington, VT 05402-1005, 802-878-6711
- Olson Products, Inc., P.O. Box 1043, Medina, OH 44258, 216-723-3210

By preparing now for the apple maggot season, you can simplify the decisions required to get your apples through the summer in good shape for harvest.❖❖

IT ALL ADDS UP

BY THE NUMBERS

Plum Curculio

❖❖ As noted previously, plum curculio adults should be finished moving into the orchard to lay eggs by 340 DD (base 50°F) after petal fall. Any sites where this amount of heat units has accumulated should not need further cover sprays to protect the newly-set fruits. This week should be fairly warm, but the previous cool spells mean that there's still plenty of time left for curc egg-laying. According to our weather records, the following are values corresponding to what's happening in a few representative sites:

Location	Petal Fall (McIntosh)	DD (base 50°F)
Highland	May 14	250 (est.)
Geneva	June 2	80
Albion	May 29	N.A.
Appleton	June 6 (on lake)	14
Williamson	May 29 (early sites)	113

Codling Moth

As of today, 6/9, a total of 204 DD have accumulated in the Hudson Valley since the "1st adult catch" biofix on May 19; in Geneva, the value from the first catch on May 27 is 133. The recommended spray window to control 1st generation codling moth is 250–360 DD. The more problematic 2nd generation has a control window starting 1260 DD from the same biofix date; we will endeavor to keep everyone posted.

The Heat is On

Everyone knows that the season always catches up with itself eventually, no matter how cool it starts out. We seem to be in the middle of our catch-up period right now, with mite and psylla numbers increasing in a number of sites, so **this week** should be the time for Agri-Mek sprays in apples in pears, if that's the option you are electing for these pests.❖❖

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva NY

	6/2	6/5	6/9
Redbanded leafroller	2.3	0.7	0.8
Spotted tentiform leafminer	131	177	67
Lesser appleworm	13.7	1.8	0.6
Oriental fruit moth (apple)	0.5	3.3	0.5
Oriental fruit moth (peach)	0	0	0
San Jose scale	0	0	9.5
Codling moth	3.7	6.0	5.4
American plum borer	1.3	1.2	1.4
Lesser peachtree borer	1.3*	0.5	3.9
Peachtree borer	-	0	1.1*

HVL, Highland NY

	6/2	6/9
Redbanded Leafroller	0.4	0.1
Spotted tentiform leafminer	5.6	0.1
Oriental fruit moth	1.1	1.2
Lesser appleworm	1.3	1.6
Codling moth	1.6	1.7
Fruittree Leafroller	0	0
Tufted Apple Budmoth	0	2.9*
Obliquebanded Leafroller	0	0.2*
Sparganothis Fruitworm	0	0.1*

* 1st catch

(Dick Straub, Peter Jentsch)

PEST FOCUS

Geneva: 1st **peachtree borer** trap catch.

Highland: 1st **tufted apple budmoth** trap catch was 6/4. 1st **obliquebanded leafroller** and **Sparganothis fruitworm** trap catches were today, 6/9.

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1- 6/9):	646	325
(Highland 1/1-6/9):	874	456

Coming Events:	Ranges:	
American plum borer 1st flight peak	360-962	134-601
Codling moth 1st flight peak	547-1326	307-824
Obliquebanded leafroller 1st catch	686-1104	392-681
Redbanded leafroller 1st flight subsides	518-1104	255-658
San Jose scale 1st flight peak	581-761	308-449
STLM 1st flight subsides	489-978	270-636

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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