scaffolds Update on Pest Management and Crop Development

FRUIT JOURNAL

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INSECTS

FIT TO BE TIED

LOOSE ENDS
(Art Agnello, Entomology, Geneva)

❖❖ By now, most of us are psychologically finished with the summer already, but not all species observe the same calendar as ours does.

There are a couple of relatively minor pests that can be prevented from becoming a big problem next season by devoting a little attention to them after the non-biological Labor Day cutoff date. The number of orchards affected by each is rather small, but you'll thank yourself later if yours is one of them:

Pearleaf Blister Mite

This is a sporadic pest of pears that shows up in a limited number of commercial pear orchards, and is a fairly common problem in home plantings. The adults are very small and cannot be seen without a hand lens; the body is white and elongate oval in shape, like a tiny sausage. The mite causes three distinct types of damage. During winter, the feeding of the mites under the bud scales is believed to cause the bud to dry and fail to develop. This type of damage is similar to and may be confused with bud injury from insufficient winter chilling. Fruit damage is the most serious aspect of blister mite attack. It occurs as a result of mites feeding on the developing pears, from the green-tip stage through bloom, causing russet spots. These spots, which are often oval in shape, are usually depressed with a surrounding halo of clear tissue. They are 1/4-1/2 inch in diameter and frequently run together. A third type of injury is the blistering of leaves; blisters are 1/8-1/4 inch across and, if numerous, can blacken most of the leaf surface. Although defoliation does not occur, leaf function can be seriously impaired by a heavy infestation.

The mite begins overwintering as an adult beneath bud scales of fruit and leaf buds, with fruit buds preferred. When buds start to grow in the spring, the mites attack developing fruit and emerging leaves. This produces red blisters in which female blister mites then lay eggs. These resulting new colonies of mites feed on the tissue within the protection of the blister, but they can move in and out through a small hole in its center. The mites pass through several generations on the leaves but their activity slows during the warm summer months. The red color of the blisters fades and eventually blackens. Before leaf fall, the mites leave the blisters and migrate to the buds for the winter.

A fall spray is recommended sometime in early October, when there is no danger of frost for at least 24–48 hr after the spray. Use Sevin 50 WP (2 lb/100), or 1–1.5% oil plus either Diazinon 50WP (1 lb/100 gal) or Thiodan 50WP (1/2–1 lb/100 gal). A second spray of oil plus Diazinon or Thiodan, in the spring, just before the green tissue begins to show, will improve the control.

Roundheaded appletree borer

There has been a recent increase in complaints about damage by this once-serious pest; it is a cerambycid beetle that attacks young, healthy

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trees, unlike many other longhorn beetles that are attracted to weak or diseased trees. Although it was once considered the worst enemy of the apple tree next to codling moth, current pest management programs have generally relegated it to a rather minor status among most apple growers, except for homeowners and newer or smaller operations. This insect is also a pest of hawthorn, mountain ash, quince, shadbush, cotoneaster, and flowering crabapple.

The adult is an attractive light brown beetle, approximately 5/8-inch long, and olive brown with longitudinal white stripes. It emerges in N.Y. in June, and is active at night, normally hiding by day. The larva is a pale yellow grub, 1 inch long, and deeply divided between segments, with a dark brown head and blackish mandibles. Eggs are laid mainly from late June through July in the bark near soil level. Two weeks are required to hatch, after which the larvae bore into the sapwood, and create tunnels throughout the lower trunk area. This insect takes 2–3 years to develop, and is closest to the surface during the first and last few months of its life.

Because of its concealed habit and long life cycle, control of this borer is problematic and can be rather labor-intensive. Control recommendations during the spring and summer consist of various physical or chemical methods to deter the females from laying eggs on the trunk (which were detailed in our May 4 [No. 7] issue this spring). Now, some important steps can be taken in the fall to help ensure the best success in eliminating this pest:

Late summer to mid-Sept: Check the bark for small pinholes with sawdust exuding from them. Kill larvae with an awl or wire or knife (use caution so as not to damage tree) OR inject a mixture with a grease gun of: a) PDB (para-dichlorobenzene moth flakes) + cottonseed oil (saturated solution), or b) 1.5% rotenone extract in ethyl alcohol.

Mid- to late Sept: Check the trunks for evidence of small larvae working just beneath the surface. Paint on PDB in cottonseed oil wherever castings are found protruding from the bark.❖❖

GET THE POINT?

BEWARE OF STORAGE SCAB

(Dave Rosenberger, Plant Pathology, Highland)

DISEASES

❖❖ Apple scab that develops on fruit after harvest is known as "storage scab" or "pin-point scab". The latter name derives from the fact that scab lesions developing during storage are often quite small and can appear as black "pin-points" on the apple skin. The 1998 apple crop is at a greater-than-usual risk for storage scab because apple scab was prevalent in many Northeastern orchards throughout spring and summer of 1998.

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scaffolds
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Storage scab poses an economic threat only when both of the following conditions are met:

1. Scab inoculum is abundant in the orchard prior to harvest.

2. Fruit in the orchard are exposed to a continuous wetting period of at least 48 hours duration at a time when fungicide residues from the last spray have been depleted.

"Abundant inoculum" is a very subjective criteria. Orchards with a few old lesions from infections that occurred in May will not have enough inoculum to initiate storage scab. However, this year some orchards had extensive infections during May that resulted in two to four infected leaves per terminal. These infections were frequently arrested by using applications of SI fungicides plus captan. In many cases, the scab epidemic was contained, but enough inoculum has persisted to allow new infections to develop on leaves during late summer.

The best way to determine if orchards have active inoculum is to check the youngest terminal leaves, especially on water sprouts near the upper-center part of the canopy. Where scab has remained active through summer, these youngest terminal leaves are now showing active scab lesions on the upper and/or lower surfaces. Lesions on the lower surface of the leaves vary from pale, diffuse brown spots to very dark-colored brownish-black spots. Scab lesions usually have a fuzzy or velvety appearance with lesion margins that are somewhat indistinct.

Some orchards may have an abundance of other leaf spots that are of no concern at this time of year. Scab lesions can be distinguished from leaf spots caused by other fungi because the latter usually appear as round lesions with distinct margins and necrotic tissue that is visible on both the upper and lower leaf surfaces. Mites, including rust mites, can also cause the entire under-surface of leaves to appear brown or bronzed in some orchards. Mite damage on the under-side of leaves should not be confused with the more distinctive spots caused by scab.

Continuous wetting periods of at least 48 hours are required to initiate infections on fruit during the preharvest interval. Fruit gradually become more resistant to apple scab as they mature. With extremely high inoculum levels, a few fruit infections might occur with wetting periods as short as 30 hours, but economic damage is not likely unless wetting periods exceed 48 hours. Very severe infections could be expected if we should encounter continuous wetting periods of more than 96 hours. Drying periods as short as two hours in the middle of longer wetting periods will significantly reduce the amount of infection that occurs.

Infections occurring during the last week (and perhaps two weeks) prior to harvest may pose less threat than infections that occur slightly earlier during the preharvest interval. Apparently infections occurring during the last week before harvest are not sufficiently well-established to allow further development during cold storage. However, delays in cooling fruit after harvest could allow even those "last-week" infections to develop symptoms during storage.

Wetting periods required for storage scab have been investigated in various production regions around the world. Experiments were conducted with Golden Delicious, Granny Smith, Starking Delicious, Starkrimson Delicious, and White Winter Permain. These cultivars showed no detectable differences is susceptibility. This data suggests that differences in susceptibility of mature fruit are probably minimal if fruit are exposed to similar inoculum levels. Under field conditions, however, susceptible varieties like McIntosh are more likely to have high levels of inoculum than are more resistant cultivars like Delicious because the higher susceptibility of McIntosh foliage increases the likelihood that leaves will carry sufficient inoculum for generating storage scab.

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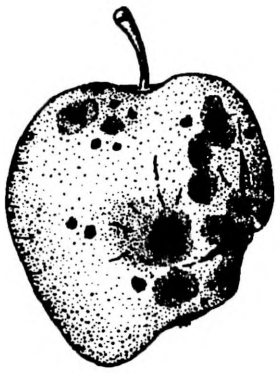
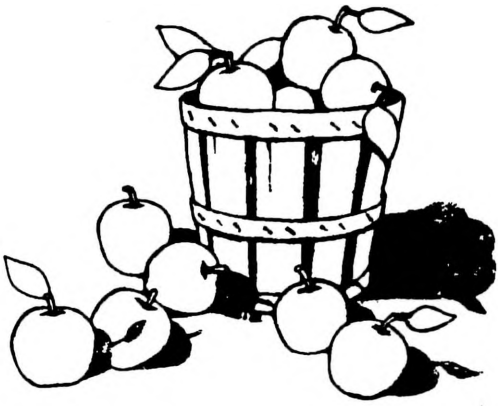
The probability of getting weather conditions that favor severe storage scab are relatively low because the probability of having continuous wetting for 4 days during harvest is low. Furthermore, enough rain would be needed prior to the four-day wetting to remove all captan residues from the fruit. Should such conditions develop, however, losses could be very high in orchards with abundant inoculum. Therefore, an additional spray of captan may be necessary in high-inoculum orchards if weather predictions call for extended wetting periods.

If high-inoculum orchards are left unprotected through an extended wetting period, nothing can be done to stop symptom development after the fruit infections are initiated. Postharvest drenches are not effective for controlling storage scab. Field applications of benzimidazole fungicides immediately following a late-season infection period will be of no value because most strains of apple scab that persisted through summer are resistant to the benzimidazoles.

If weather conditions favor late-season scab development and high-inoculum blocks are not protected with fungicide, then the best solution will be to sell the potentially-affected fruit as soon as possible after harvest. In experiments conducted in South Africa, the first symptoms of storage scab appeared on Granny Smith after 80 days at 1–2 °C as compared to 35–45 days for fruit at 20 °C. However, scab lesions might appear in less than 80 days at 1–2 °C on fruit that were infected earlier during the preharvest interval. Other studies have shown that new lesions appear more quickly at higher temperatures, but the total number of lesions is ultimately the same if apples are stored long enough to allow symptoms to develop at cold temperatures. Storing apples under reduced relative humidity can minimize lesion size because lesions develop greater size when fruit are held under high-humidity conditions, especially if the latter results in condensation developing on the fruit surface during storage.

The bottom line: Risks of storage scab are relatively small even in a year when inoculum is relatively abundant. However, the consequences of storage scab can be severe since infection rates can reach 100% and the losses become evident only after storage costs have been incurred. Therefore, monitor orchards now to determine if scab is active. Follow weather forecasts carefully. Apply captan in high-risk blocks ahead of predicted extended-wetting periods.❖❖





UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1- 8/24):	3094	2135
(Geneva 1997 1/1-8/24):	2585	1733
(Geneva "Normal" 1/1-8/24):	2760	1999

Coming Events(Geneva):	Ranges:	
OBLR 2nd flight subsides	2809-3656	1930-2573
Lesser appleworm 2nd flight subsides	2775-3466	2002-2460
Lesser peachtree borer flight subsides	2782-3474	1796-2513
Redbanded leafroller 3rd flight subsides	3103-3433	2013-2359
STLM 3rd flight subsides	3235-3471	2228-2472
Oriental fruit moth 3rd flight subsides	2987-3522	2018-2377
Peachtree borer flight subsides	2230-3255	1497-2309
San Jose scale 2nd flight subsides	2494-3257	1662-2302
Apple maggot flight subsiding	2764-3656	1904-2573
American plum borer 2nd flight subsides	2841-3698	1907-2640
Codling moth 2nd flight subsides	2782-3693	1796-2635

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	8/17	8/20	8/24
Spotted tentiform leafminer	428	352	107
Redbanded leafroller	0.3	0.5	0.1
Oriental fruit moth (apple)	2.3	5.5	2.8
Lesser appleworm	1.7	3.0	1.5
Codling moth	5.2	2.2	1.4
San Jose scale	7.8	1.3	0.6
American plum borer	1.0	0.3	0.9
Lesser peactree borer	0.8	0.3	0.4
Obliquebanded leafroller	0.3	0.3	0
Apple maggot	0	0.1	0

HVL, Highland, NY

	7/27	8/3	8/10
Spotted tentiform leafminer	45.1	25.9	19.6
Redbanded leafroller	0.4	0	0.4
Oriental fruit moth	0.6	0.4	0.4
Lesser appleworm	0.6	0.4	0.5
Codling moth	3.4	8.3	0.9
Obliquebanded leafroller	0.1	0.1	0.1
Variegated leafroller	0.6	0.7	1.1
Tufted apple budmoth	0	0.1	1.2
Fruittree leafroller	0	0	0
Sparganothis fruitworm	0.1	0.4	0.5
Apple maggot	0	0.09	0.2

* 1st catch

(Dick Straub, Peter Jentsch)

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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