scaffolds Update on Pest Management and Crop Development

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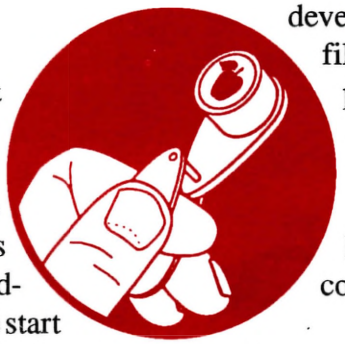
INSECTS

CMB

COMSTOCK MEALYBUG (Art Agnello & Dave Kain)



❖❖ The first adult males of the season were taken in pheromone traps last week in Wayne Co., right on schedule, so it shouldn't be long before we start seeing some adult females in pear foliage, followed by their invasive crawler offspring. According to our tests the past few years, this is the most susceptible stage for chemical control, which we expect sometime during the next couple of weeks, especially in the Hudson Valley. Considering our first catch on 7/1, peak flight may well be occurring right now.

The following information is taken from the Comstock Mealybug IPM Fact Sheet, No. 22:

The Comstock mealybug (CMB) was first reported in the United States in 1918 concurrently in New York and California, and has since spread to all coastal states and the Ohio and Mississippi River valleys. Its fruit hosts include pear, apple, and peach, and it is also a pest of several ornamental plants such as catalpa, mulberry, pine and others. CMB was first recognized as a fruit pest in the 1930's. From 1950 to 1980, it was infrequently noticed as a fruit pest, but in the early 1980's it caused damage to apple crops in the Hudson and Champlain valleys, and to pears in western New York later in the eighties.

The Comstock mealybug adult female is wingless and elongate-oval in shape, with a many-segmented body (2.5 to 5.5 mm long) and well-developed legs. It has 17 pairs of body filaments, with the caudal (posterior) pair being one-third as long as the body. The legs and antennae are inconspicuous. The body of the adult female is reddish-brown, but has a white appearance because it is covered with wax.

Because of its small size and short life span, the adult male is very unlikely to be seen in the field unless it is captured in pheromone traps; even then it is difficult to distinguish without the aid of a microscope. It has a gnat-like appearance, with delicate, almost veinless wings, a light reddish-brown body (about 1 mm long), and two caudal filaments as long as or longer than the body. It is peculiar in having three pairs of eyes (dorsal, lateral, and ventral). The legs and 10-segmented antennae are apparent, but the mouthparts are absent.

There are two generations of Comstock mealybug in New York, each taking 60 to 90 days to complete, depending on seasonal temperatures. The egg is generally thought to be the primary overwintering stage, but recent evidence from western N.Y. indicates that some nymphs and adult females from the second (summer) generation overwinter, with eggs being laid in the spring rather than the previous fall. Adult females and males emerge at the same time, from late June to mid-July for the first (overwintering) generation, and late August to mid-September for the second (summer) generation. Adult females are present for a total of 4–6 weeks, and oviposit for about one week after mating. Males survive for only a few days after emerging.

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The eggs are elliptical (0.3 mm long and 0.17 mm wide) and bright orange-yellow, but may appear duller because of the waxy filaments covering them. Eggs are laid in jumbled masses along with the waxy filamentous secretions in protected places such as under bark crevices, near pruning cuts, and occasionally in the calyx of fruit. The summer-generation eggs are laid from mid-June through late July, and the overwintering eggs from mid-August into October. The summer generation eggs have an incubation period of about 11 days.

The first and second larval instars of the female and male CMB are virtually indistinguishable. They appear similar to adult females except that they are smaller, more oval-shaped, lack the long body filaments, and are more orange-yellowish because they have less wax covering. The first instar female crawler is flattened (0.3 to 0.5 mm long) and pale yellow, becoming darker in time. The second (0.9 to 1.2 mm long) and third (1.7 to 2.5 mm long) instar females are similar in appearance, but become progressively browner and redder.

The third instar of the immature male, called a "pro-pupa", is contained in a cocoon that begins forming toward the end of the second instar. It is 0.9 to 1.2 mm long and elongate-oval, with the head, thorax, and abdomen fused. The fourth stage of the immature male is the pupa. It is elongate, 1.2 to 1.4 mm long, and light reddish-brown. As with the adult male, it has three pairs of eyes and 10-segmented antennae.

The overwintered eggs hatch from mid-April through May and the nymphs (crawlers) migrate from the oviposition sites to their feeding sites on terminal growth and leaf undersides of trees and shrubs. This hatch is completed by the petal fall stage of pears. Nymphs that hatch from these overwintered eggs are active from roughly early May to early July. As the nymphs approach the adult stage, they tend to congregate on older branches at a pruning scar, a node, or at a branch base, as well as inside the calyx of pears. Second- (summer) generation nymphs are present from about mid-July to mid-September.

The Comstock mealybug poses two major concerns for the pear processing industry of New York: First, the emergence of crawlers and adult females from the calyx of pears at the packing-house creates a nuisance to workers. Second, pears to be made into puree typically are not peeled or cored by New York processors, so infestations can potentially result in unacceptable contamination of the product.

Another problem, of concern to apple growers in the 1930s and 1940s, and again in the Hudson and Champlain Valleys in the early 1980s, is that the honeydew secreted by the crawlers is a substrate for sooty molds growing on the fruit surface. This problem also occurs on peaches in Ontario, Canada. These molds result in a downgrading of the fruit, and are therefore an additional cause of economic loss.

To date, the Comstock mealybug has been a problem to growers of processing pears because of the contamination and aesthetic reasons noted. Crawler infestation of pears destined for pro-

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cessing can be determined by examination of the calyx end. Cut the pear lengthwise to expose the inner calyx area, which is often concealed in the whole fruit. Once the insects have reached these sites, it is nearly impossible to remove them. Such an infestation generally indicates the need for one or more insecticide sprays during the growing season, directed against the migrating crawlers.

Examine the terminal growth for crawler activity periodically throughout the summer. Crawler and adult female activity can also be monitored by wrapping black electrical or white carpet tape around low scaffold branches and inspecting for crawlers that have been caught by the tape. They can be recognized with a hand lens or, with some experience, by the unaided eye.

Watch this space for our best advice on when to apply a material such as Penncap-M, Diazinon, Lannate, or (on apples only) Lorsban to control this insect.❖❖

FIELD NOTES

HUDSON VALLEY

HUDSON VALLEY DISEASE UPDATE
(Dave Rosenberger)

❖❖ Fabraea on pears

The humid weather with intermittent rains last week was ideal for development of Fabraea leaf spot and fruit spot on pears. Most commercial problems that I have seen in the past have surfaced shortly after the Fourth of July, when the disease suddenly "explodes" in certain blocks. Thus, pear growers should be careful to maintain appropriate fungicide coverage during July and early August.

Fabraea appears as small, round, purplish leaf spots. The first spots usually develop on leaves sometime after petal fall. Very few growers or fieldmen recognize the early infections because they are usually present in very limited numbers and the leaf spots are rather nondescript. Each of these initial infections, however, can produce millions of slimy spores that are disseminated by splashing rain or by pear psylla and other insects. If spores are disseminated by insects, infection can occur during long dew periods in the absence of rain. Economic damage is usually caused by the rapid development of secondary infections in orchards where primary infections became established in June. If fungicide protection is lacking or inadequate, fruit can become severely infected during July and August, and severely infected Bosc trees can lose most of their leaves by late August.

Fabraea is relatively easy to control if fungicides are applied before the disease reaches epidemic proportions in an orchard. Mancozeb is the most effective fungicide for Fabraea, but it can no longer be used at this time of year. (Mancozeb used at petal fall, first and second cover can help prevent the primary infections, which provide inoculum for disease development during July.) Ziram (one formulation is labeled for East coast pears) is probably the best bet for controlling spread of Fabraea during summer. Benlate has been effective in some trials and ineffective in others. Ziram applied on a three-week interval will provide adequate protection, except where heavy rains remove fungicide residues or where the disease was well established before the first spray was applied. Where disease pressure is very high (i.e., early infections were not controlled), sprays may need to be applied on a 14-day interval.❖❖

GENEVA

WESTERN/CENTRAL NY DISEASE SITUATION
(Wayne Wilcox)

❖❖ **Fire blight**. Fire blight outbreaks (blossom blight) are fairly widespread on susceptible apple cultivars, and even on some of the less-susceptible ones (e.g., Empire, Golden Delicious). Most of these occurred on May 31 and June 1, and were predicted on the basis of the MARYBLYT model criteria. Additional blossom infection occurred about a week later on late-blooming cultivars in late locations; e.g., near Lake Ontario. .

There should have been no surprise that infection occurred, although many (including me) are somewhat surprised at how many orchards with little or "no" history of blight got nailed. As has been said so often, we've been studying this disease for over 100 years and still don't understand it as well as we'd like to. Nevertheless, where growers DID spray strep in reaction to the May 31 infection period, it generally did a good job throughout the region. For instance, in three Orleans Co. orchards that Debbie Breth and I have been working with, 6% (Rome), 13% (Crispin), and 5% (Rome) of the blossom clusters were infected in the unsprayed parts, but only 0.4%, 0.6%, and 0.4% of clusters were infected where strep was sprayed in response to the May 31 infection period.

Additional response strategies at this point have been discussed before. Remember, pruning operations are most necessary and most likely to be effective on smaller trees; use strep only after hail; the ugliest blocks are often those that are ultimately least harmed or in need of action (big old 20-ounce, Greenings, etc. with lots of running strikes). The lesson here is that this infection was predicted and that the recommended control treatment was effective. Nobody wants to spray strep, but omitting it at the time of a predicted infection in marginally at-risk blocks has an element of Russian Roulette about it. This time the gun went off.

Sooty blotch/flyspeck. Conditions have been ideal for development of these diseases. Remember that real problems can develop if they get started early and provide secondary inoculum for epidemic spread later in the summer (as in 1990 and 1992). Dave Rosenberger's data indicates a 3-week period of protectant activity for summer rates of the EBDC's and about a 2-week period for captan. Because Benlate (and to a lesser extent, Topsin-M) have some curative activity, one of these materials should be used as soon as possible/convenient if fruit were unprotected during much of the last 3 weeks.❖❖

PEST FOCUS

Geneva:

Obliquebanded leafroller 1st catch 6/14 in Geneva. Degree days (base 43°F) since then = 618. Sampling for larvae should begin now.
Spotted tentiform leafminer 2nd flight began 6/20. Degree days (base 43°F) since then = 394.
Comstock mealybug adult male 1st catch 7/1. (Wayne County)
1st **apple maggot** catch 6/30.

Highland:

Spotted tentiform leafminer 2nd flight began 6/20. Degree days (base 43°F) since then = 440.
1st **apple maggot** catch 6/29.

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva NY

	6/27	6/30	7/5
Spotted tentiform leafminer	580	855	340
Red-banded leafroller	0	0	0.1*
Lesser appleworm	0	0	0.1
Oriental fruit moth(apple)	0.1	0	0.2
Oriental fruit moth(peach)	0	0	0
Codling moth	0.9	0	4.9
American plum borer(plum)	0.1	0	0
American plum borer(cherry)	0	0	0
Lesser peachtree borer	2.1	1.8	1.4
Peachtree borer	0.6	0.7	0.3
Obliquebanded leafroller	0	0.1	0.1
Pandemis leafroller	0.5	0.8	0.1
Apple maggot	0	0.1*	0

* = 1st catch

HVL, Highland NY

	6/20	6/27	7/5
Redbanded leafroller	0	0	0.1
Spotted tentiform leafminer	17.1	41	60
Oriental fruit moth	0.4	0.1	0.9
Fruittree leafroller	0.1	0.1	0
Lesser appleworm	0.1	0.3	0.3
Codling moth	1.9	1.6	0.2
American plum borer	0	0	1.1
Sparganothis fruitworm	1.8	2.7	2.9
Tufted apple bud moth	1.6	0.6	0.4
Variegated leafroller	0.8	2	0.3
Obliquebanded leafroller	3.7	3.2	0.1
Apple maggot	–	0	0**

** 0.3/trap /day 6/29 and 7/1. 6/29 1st catch.

(Dick Straub, Peter Jentsch)

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations		
(Geneva 1/1 – 7/5):	1417	999
(Highland 1/1 – 7/5):	1819	1026

Coming Events:	**Ranges:**	
Oriental fruit moth 2nd flight peak	1662–2029	1062–1381
Redbanded leafroller 2nd flight peak	1479–2443	952–1381
STLM 2nd flight peak	1361–1979	854–1698
STLM 2nd gen. tissue feeders present	1504–2086	952–1201
Codling moth 2nd flight peak	1587–2956	1061–2013
OBLR 1st flight subsides	1420–2277	899–1546
OBLR summer larvae hatch	1076–1513	630–980
Comstock mealybug 1st flight peak	1528–1782	981–1185
San Jose scale 2nd flight begins	1449–1975	893–1407
Lesser peachtree borer flight peak	1099–2330	667–1526
Peachtree borer flight peak	869–2241	506–1494

THANKS IN ADVANCE

INPUT TO THE RECOMMENDS
(Art Agnello)

❖❖ One of the most "picky" jobs needing to be done each year is updating and changing the Tree Fruit Recommendations for the coming season. If it's to be done right, the work involved is not so much difficult as it is exacting, since it usually means chasing down many different leads and comments from diverse sources. This year, I'll be away on sabbatic leave for six months starting about the middle of August, which is just when I normally begin this ritual. Although Dave Kain and Harvey Reissig will be providing stalwart backup for me, I'd like to make the task as simple as possible for them to complete, so I am requesting that those of you who normally provide input to the Recommends process (agents, technical reps, etc.) give some thought about any changes you'd like to suggest, and pass them along to me during the next few weeks so that everyone will be satisfied with the final product.❖❖

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