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Update on Pest Management
and Crop Development

F R U I T J O U R N A L

July 6, 1992

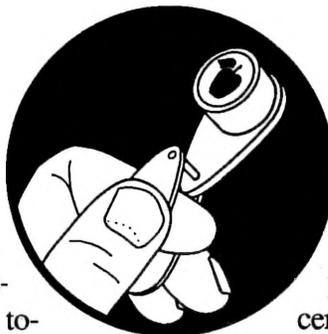
VOLUME 1

Geneva, NY

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APPLE MAGGOT

❖❖ The first adult was caught on volatile-baited sphere traps in a research orchard at the Geneva Station today, 7/6. This corresponds with a DD accumulation of 1275 (base 43°F), 772 (base 50°F); the predicted mean values for this event are 1325 (43°F) and 841 (50°F), so we are close to an average year on this for once. So far, of course, nothing approaching a treatment threshold (5 per volatile-baited sphere trap) has been seen. Any rain we receive, such as the small amount that moved through the area this past weekend, in addition to warm temperatures, will increase the likelihood of finding flies in traps you may have out in commercial blocks. Recall that adults found in abandoned (or unsprayed) sites will still need 7-10 days before becoming mature enough to begin laying eggs.❖❖



CMB

COMSTOCK
MEALYBUG
(Art Agnello &
Steve Spangler)

❖❖ So far, there haven't been many reports of crawlers in apple or pear orchards in our area, but there are certain to be some adult females in pear foliage by now. According to our tests the past few years, the susceptible stage for chemical control is the newly hatched crawler, which we don't expect for a couple of weeks yet. We hung pheromone traps for the adult males in Wayne Co. a couple of weeks ago and caught the first ones on July 1, which may indicate the peak flight is 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,

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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 New York 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.

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

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Dept. of Entomology
NYSAES, Barton Laboratory
Geneva, NY 14456-0462

Phone: 315-787-2341 FAX: 315-787-2326
Internet: art_agnello@cornell.edu

Editors: A. Agnello, D. Kain

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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 processing 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. ❖❖

"NEW"
PESTS

MULLEIN PLANT BUG

Campylomma verbasci

(Reprinted from "Integrated Pest Management for Apple Orchards in Ontario", Canada)

❖❖ There have been a few reports of apple damage that appears to have been caused by this close cousin to the Tarnished Plant Bug. We don't often witness this insect to be a pest in New York, but our colleagues just over the border in Ontario are quite familiar with it:

"Mullein bugs (MB) are *beneficial* most of the year, when they act as predators of mites, aphids and leafhoppers. However, mullein bugs may feed on fruit for a brief period after petal fall. Damage is often localized, but it may be quite severe.

"Mullein bugs overwinter as eggs laid in bark of last season's growth. Eggs hatch during bloom and the nymphs may (or may not) feed on young fruit. Most fruit injury occurs at this time. Initially, injury appears as a tiny pin prick on the fruit, surrounded by a water-soaked area which is not easily noticed. As the fruits enlarge, the MB injury

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forms a raised pimple on the surface of the fruit. Mullein bug damage is most serious in early cultivars and Red Delicious, Golden Delicious and Northern Spy, although injury to McIntosh is becoming more common. Much of the MB injured fruit will drop with the June drop.

"Begin monitoring for MB nymphs during bloom and continue at least once a week and continue until 2-3 weeks after petal fall. Mullein bug nymphs are very small (smaller than an adult aphid) and light green in color. They move very rapidly when disturbed. Nymphs can be detected by limb tapping. A tapping tray and a rubber stick or hose are necessary equipment for tapping. Sample at least 25 branches per block and one branch per tree. Tap each branch sharply three times while holding the tray below the branch. Check the tray after tapping each branch. Mullein bug nymphs are often present in fruit clusters, so tap branches having bloom or fruit, rather than vegetative growth. Concentrate on sampling in blocks of Red Delicious, Golden Delicious and Northern Spy, as well as blocks where MB has been a problem in the past.

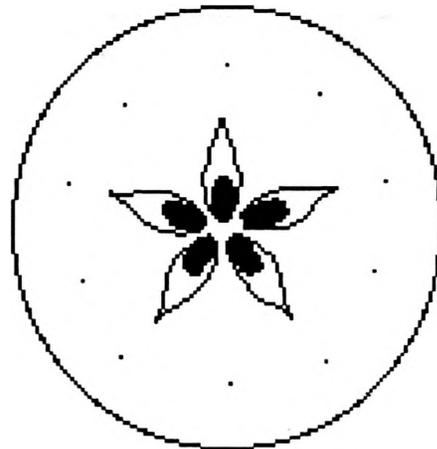
"There are no scientifically proven thresholds for MB control. However, a threshold of 3-5 nymphs per 25 tapped branches has been used successfully in Ontario. If large numbers of aphids or mites are present, it may be possible to increase the threshold."

Although MB is not on the apple label, diazinon will provide good control if you are using it for a labeled pest. An application of an OP such as Guthion at petal fall may suppress MB, but will not provide adequate control once the threshold is reached. Mullein bugs are easier to control when they are young; considerable MB injury can occur in a short time. Control can also be achieved if Lannate was used for STLM control at petal fall. Pyrethroids applied at petal fall for STLM may provide short-term control of MB, but continued sampling will be necessary to be certain there is no resurgence. ❖❖

CHEM NEWS

KELTHANE 50W

❖❖ We received word from John Long, Kelthane Product Development Manager with Rohm & Haas Co., that Kelthane 50W is now fully registered in New York, and is available primarily in the apple market. It is labeled for the same crops and uses as Kelthane 35, and can be distinguished from the original by the fact that it is packaged in a 6-lb. bag. Some recent research trials by Harvey Reissig showed favorable results with the 50W formulation, even in some high-population trees where the 35W formulation seemed not to be very effective. ❖❖



PHEROMONE TRAP CATCHES								
Number/Trap/Day, Geneva NY					Total Number, HVL, Highland NY			
	6/25	6/29	7/2	7/6		6/29	7/6	
Redbanded Leafroller	0	0	0	0.38	Spotted Tentiform Leafminer	-	300	
Spotted Tentiform Leafminer	209.2	413.5	507.2	642	Redbanded Leafroller	0	6	
Oriental Fruit Moth (apple)	0	0	0	0.3	Obliquebanded Leafroller*	1.5	5	
Oriental Fruit Moth (peach)	0	0	0	0	Sparganothis Fruitworm	6	4	
Lesser Appleworm	0	0	0	0.1	Oriental Fruit Moth	0	4.5	
Codling Moth	5.2	17.8	20.5	16.1	Codling Moth	13	15	
San Jose Scale	0	0	0	0	Apple Maggot	0	1 (1st catch)	
Lesser Peachtree Borer (cherry)	1.5	7.5	9.8	9.1				
Lesser Peachtree Borer (peach)	0.3	2.8	1.3	1.1				
Peachtree Borer	0.5	1.1	2.2	1.6				
Obliquebanded Leafroller	2.2	1.8	0.7	0.6				
Apple Maggot	0	0	0	0.1				

* Note: OBLR Degree Days (base 43): 637 as of 7/6.
Begin sampling for infested clusters.
(Dick Straub)

UPCOMING PEST EVENTS			
Current DD accumulations (Geneva 1/1 - 7/6):		<u>43°F</u> 1275	<u>50°F</u> 772
Coming Events:		Ranges:	
Oriental fruit moth second flight begins	1272-1586	772-1037	
Redbanded leafroller second flight begins	1280-1744	804-1148	
Spotted tentiform leafminer 2nd flight peak	1361-1979	854-1355	
Woolly apple aphids present	1200-1505	763-955	
Note: For current information in your area of the state, check PEST STATUS under FRUIT on CENET.			

PEST FOCUS
OBLR - 507 DD (base 43°F) have accumulated since the first catch of second brood OBLR. Sampling is recommended after 600 DD (base 43°F) have accumulated. This will probably occur within the week.
STLM - The spotted tentiform leafminer second brood flight began 6/22. Sampling for STLM sap-feeding larvae should begin 500-700 DD (base 43°F) from this date. So far, 290 DD have accumulated.

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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Dept. of Entomology
NYS Agricultural Exp. Sta.
Barton Laboratory
Geneva, NY 14456-0462

ARTHUR AGNELLO
ENTOMOL. OGY

NYSAES
