scaffolds Update on Pest Management and Crop Development

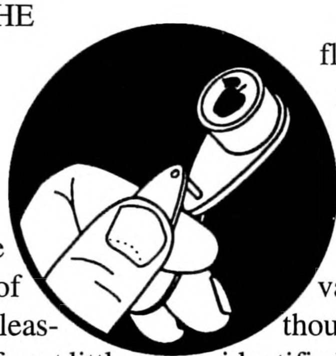
F R U I T J O U R N A L

July 14, 1997 VOLUME 6, No. 17 Geneva, NY

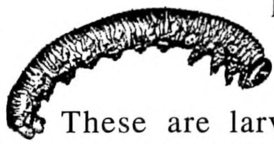
INSECTS

SPOOKY, ISN'T IT?

AFRAID OF THE DOCK
(Art Agnello, Entomology, Geneva)



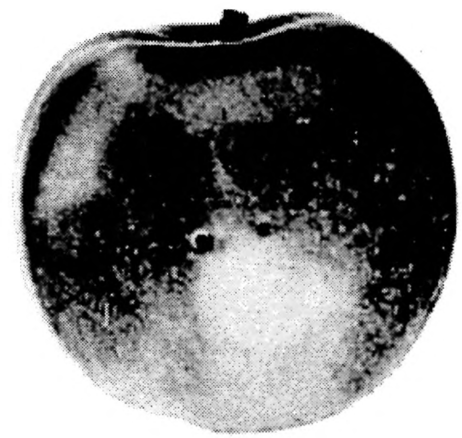
❖❖ Before and during apple harvest in recent years, a number of growers and fieldmen have been unpleasantly surprised by the appearance of neat little (2 mm) holes bored into the side of their fruit, similar in appearance to those caused by a stem puncture. Although some graders are inclined to attribute this damage to apple maggot or European corn borer, cutting open these apples reveals a bright green worm with a lightish brown head, not feeding but lying inactive, in the burrow extending in from each hole.



These are larvae of the dock sawfly, *Ametastegia glabrata*, a highly sporadic but nonetheless well documented apple pest that has been known to show up in our area since 1908.

Dock sawfly probably confines its feeding almost entirely to plants belonging to the buckwheat family (Polygonaceae), including numerous docks and sorrels, the knotweeds and bindweeds, or else wild buckwheat or alfalfa. In feeding on any of these plants, the larvae devour the leaf tissue and the smaller veins, eating out irregular holes in the leaves. Ordinarily, the midribs and the larger veins are untouched. This insect should not be confused with the related European apple sawfly, *Hoplocampa testudinea*, which has a whitish larva that lives and feeds in young apples, particularly prevalent in the eastern apple regions of N.Y.

Injury to apples by the dock sawfly is known to occur only in the late summer and early fall, when the fruit is approaching maturity and the sawfly is searching for an overwintering site. The greater hardness of immature apples probably deters the larvae from burrowing into these, so although 4 generations per year have been identified, only the last is of concern to apple growers. The injury to apples consists externally of the small round holes bored by the larvae, which after a few days show a slightly sunken, brownish ring around them and occasionally may be surrounded by a larger discolored halo. These holes may occur anywhere on the surface, but are most numerous around the calyx and stem



ends, or at a point where the apple touches a leaf or another apple, since it is easier for the larva to obtain a foothold here. Inside, the injury is usually more serious, since the larva often burrows to the core and usually hollows out a pupal cell somewhat larger than itself. Apples may have three or four, or sometimes even eight, holes in them of varying depths, but contain only one or two worms.

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Since the dock sawfly does not feed upon any part of the apple tree, but must live on the above-mentioned succulent weeds, it becomes an apple pest only where these plants are growing in or around the orchard. There is little danger from this insect in orchards where the food plants don't exist. Likewise, the possibility of the larvae coming into the orchard from neighboring meadows, ditch banks, or roadsides is slight, for the larvae are incapable of finding their way over any extent of bare soil. The adults, though active, are not strong fliers, and it is not possible for the insect to travel far in this stage. Now would be a good time to assess the weed situation in your orchard and make plans for such selective herbicide applications as may be appropriate regarding this insect. Even though common wisdom says this sawfly is a pest only every 10–12 years, this is only an average estimation, and it's not a bad idea to anticipate the unexpected when hardly any season is considered to be "average".

(Information adapted from Newcomer, E. J. 1916. The dock false-worm: An apple pest. USDA Bull. 265, 40 pp.)❖❖

SUMMER SCOURGE

JAPANESE BEETLE

❖❖ We are again entering the part of the summer when Japanese beetles begin to show up, and low numbers have already been noted in a few orchards. This perennial pest overwinters as a partially grown grub in the soil below the frost line. In the spring the grub resumes feeding, primarily on the roots of grasses, and then pupates near the soil surface. Adults begin to emerge during the first week of July in upstate N.Y. The adults fly to any of 300 species of trees and shrubs to feed; upon emergence, they usually feed on the foliage and flowers of low-growing plants such as roses, grapes, and shrubs, and later on tree foliage. On tree leaves, beetles devour the tissue between the veins, leaving a lacelike skeleton. Severely injured leaves turn brown and often drop. Adults are most active during the warmest parts of the day and prefer to feed on plants that are fully exposed to the sun.

Although damage to peaches is most commonly noted in our area, the fruits of apple, cherry, peach and plum trees may also be attacked. Fruits that mature before the beetles are abundant, such as cherries, may escape injury. Ripening or diseased fruit is particularly attractive to the beetles. Pheromone traps are available and can be hung in the orchard in early July to detect the beetles' presence; these products are generally not effective at trapping out the beetles. Fruit and foliage may be protected from damage by spraying an insecticide such as Sevin or Penncap-M when the first beetles appear.

(Information adapted from: Johnson, W.T. & H.H. Lyon. 1988. Insects that feed on trees and shrubs. Cornell Univ. Press.; and Howitt, A.H. 1993. Common tree fruit pests. Mich. State. Univ. Ext. NCR 63.)❖❖

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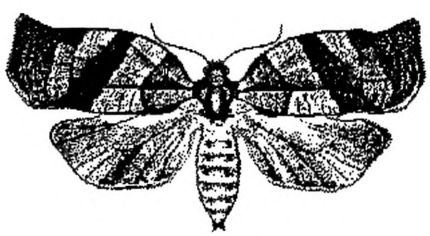
TIME'S UP!

OBLR CLOCK

❖❖ Leafroller larvae averaging about the 2nd instar in development are now starting to damage unsprayed fruit in western N.Y. orchards, although the fireblight and dearth of much terminal growth makes them somewhat more difficult to find than they often are. This should be a good week for those waiting for the 600 DD (base 43°F) mark to begin scouting for treatment decisions; our current (7/14) readings follow:

SITE	FIRST CATCH	DD TOTAL
Highland	June 9	1008
Knowlesville	June 16	773 (Waterport)
Geneva	June 17	704
Wolcott	June 19	617 (Sodus)

Check pp. 83, 91–92, 95 and 100 in the 1997 Recommends for guidelines on sampling procedures.❖❖



PEST FOCUS

Geneva: Spotted tentiform leafminer 2nd flight began 6/23. DD_{43} = 574. 1st **Comstock mealybug** adult trap catch 7/8.

Highland: Spotted tentiform leafminer 2nd flight began 6/16. DD_{43} = 819 (from 6/27). 1st **apple maggot** trap catch 7/11. Degree days (base 50°F) since 1st codling moth catch = 983.

DISEASES

SUMMER FUN, GUYS!

SOOTY BLOTCH AND FLYSPECK

(Dave Rosenberger, Plant Pathology, Highland)

❖❖ In northeastern United States, fungicides are applied to apples from mid-June through August primarily to control sooty blotch and flyspeck. Four or five summer fungicide applications may be needed to control these diseases in wet years, whereas only two or three well-timed applications are needed in dry years. Omitting summer fungicide sprays is risky, however, because gaps in fungicide protection during critical periods in summer can result in the sudden appearance of numerous flyspeck infections just before harvest.

Field research conducted in the Hudson Valley over the past 10 years has been used to develop a model for timing apple fungicide sprays during the summer. The model targets flyspeck because fungicide programs that control flyspeck will nearly always control sooty blotch under N.Y. conditions. The N.Y. Flyspeck Model has worked well in small-plot tests where fungicides were applied with a high-pressure handgun. The model is currently being tested in commercial orchards with funding supplied by the New York State IPM program.

The concepts used to develop the N.Y. Flyspeck Model are outlined below. Because the model has not yet been validated with airblast sprayers in commercial orchards, we are not yet recommending this approach for timing summer fungicides. Omitting fungicides is always risky because potential losses from disease on fruit can quickly obliterate any savings that accrue from witholding sprays. Nevertheless, the information and concepts used to develop the N.Y. Flyspeck Model may be useful in deciding how to time summer fungicides even if the ultimate decisions on fungicide timing end up being considerably more conservative than those suggested by the model.

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The first step in constructing the N.Y. Flyspeck Model was the development of a table of estimated residual activities for various summer fungicides (Table 1, page 5). This table was developed using data from small-plot field trials conducted in the Hudson Valley from 1987–1996. Residual activities shown in the table are shorter during summer than for the last spray before harvest because cooler conditions in the fall slow development of sooty blotch and flyspeck, and also because late infections will fail to develop symptoms before harvest and therefore are of no concern.

In addition to the residual activity of fungicides shown in Table 1, research has shown that Benlate and Topsin M provide limited eradicant activity against sooty blotch and flyspeck. Their eradicant activity decreases as the time between infection and fungicide application increases. Benlate has reasonable eradicant or suppressive activity against flyspeck infections that have accumulated fewer than 100 hours of wetting after infections occurred. (The eradicant activity for Topsin M has not yet been defined, but Topsin M probably has less eradicant activity than does Benlate.) Working in North Carolina, Brown and Sutton showed that sooty blotch and flyspeck appear on fruit only after fruit are exposed to 275–300 hours of accumulated wetting following infection. Thus, it appears that Benlate will provide eradication of flyspeck and sooty blotch provided the infections are less than one-third of the way through the incubation period, with "incubation period" defined as 275–300 hours of accumulated wetting after infection.

By taking advantage of both the residual activity of fungicides and the eradicant activity of Benlate, it may be possible to eliminate one or two summer fungicide sprays after the last scab spray is applied in early to mid-June. The logic is as follows:

1. Assume that the last spray for apple scab (usually first or second cover spray) will provide the residual activity noted in Table 1. If mancozeb is used for the last scab spray, then fruit will be protected for the shorter of either 21 days or through 3.5 inches of accumulated rain following the mancozeb application.

2. After the residual activity from the last scab fungicide spray is exhausted, a "protection gap" of up to 100 hours of leaf wetting (including dew periods) can be tolerated if Benlate is used as an eradicant later in the season. A leaf wetness recorder will be required to monitor hours of leaf wetting, but data from a regional recording station may suffice for orchards within 10–15 miles of the recording station. During the protection gap, fruit will not be protected by fungicides, so sooty blotch and flyspeck infections will occur on fruit if inoculum is present in the vicinity of the orchard.

3. At the end of the protection gap, Benlate-captan or Benlate-ziram sprays must be applied to eradicate infections. To be conservative and allow for unexpected rains that might intervene before sprays are completed, the Benlate program should be initiated after the accumulated wetting during the protection gap reaches 80 hours. A minimum of two Benlate applications should be used following the protection gap and prior to harvest to ensure complete suppression of incubating flyspeck infections. The Benlate sprays should be 14–21 days apart and, in dry years, will most likely coincide with insecticide applications timed to control apple maggot. Including Benlate in August applications should also control black rot infections that may develop in fruit lenticels as the fruit begin to ripen.

<u>Caution</u>: Omitting fungicide sprays during July is not recommended if tree canopies are dense (as in trees left unpruned last winter) or if fruit are clustered. In orchards with dense canopies or clustered fruit, complete fungicide coverage will almost certainly be impossible during late summer when the canopy reaches maximum density and the clustered fruit prevent fungicide from reaching the center of clusters. In such orchards, Benlate should be applied during July when the likelihood of decent coverage is better than it would be in August. Even a very tight fungicide program may fail to control flyspeck during wet seasons in orchards with dense canopies. ❖❖

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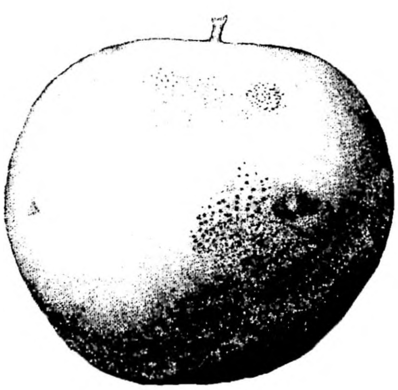
Table 1. Estimated residual activities (under New York conditions) of fungicides used for controlling sooty blotch and flyspeck.

Fungicides grouped by effectiveness	Rate per 100 gal dilute spray	spray interval (days)	June/July maximum rainfall[1] (in.)	June/July total no. of days	From the last spray until harvest maximum inches of rain allowed before Aug. 30 without respray
Benlate + ?[2]	3 oz				
or					
Mancozeb	1 lb	21	3.5	50	4.0
or					
Ziram/sulfur	1+1 lb				
Topsin M + ?[2]	3 oz				
or					
Ziram 76W	1.5 lb	21	2.5	45	3.0
or					
Captan 50W	2.0 lb				
Ziram 76W	1 lb	21	2.0	45	2.5
Captan 50W	1 lb	14	2.0	30	2.5

[1]As soon as the rainfall amounts are exceeded, fungicide coverage should be renewed.
[2]Must be applied with a contact fungicide (captan or ziram).



INSECT TRAP CATCHES (Number/Trap/Day)

Geneva NY

	7/7	7/10	7/14
Redbanded leafroller	5.0	2.7	5.6
Spotted tentiform leafminer	463	618	470
Lesser appleworm	0.5	2.8	1.0
Oriental fruit moth (apple)	0.9	8.0	3.0
Oriental fruit moth (peach)	0.1	0.2	0
San Jose scale	0	0	0.1
Codling moth	1.3	2.5	0.3
American plum borer	0.5	0	0.1
Lesser peachtree borer	0.6	0.3	2.0
Peachtree borer	0.1	0.2	0.6
Pandemis leafroller	0.5	0	0
Obliquebanded leafroller	0.4	0.7	0
Apple maggot	0.06*	0.3	0.06

HVL, Highland NY

	7/7	7/14
Redbanded Leafroller	5.1	9.1
Spotted tentiform leafminer	85.3	59.7
Oriental fruit moth	1.3	1.3
Lesser appleworm	0.2	0.4
Codling moth	1.9	0.6
Fruittree Leafroller	0	0
Tufted Apple Budmoth	1.3	0.4
Obliquebanded Leafroller	0.6	0.2
Sparganothis Fruitworm	3.9	0.7
Apple maggot	0	0.1*

* 1st catch

(Dick Straub, Peter Jentsch)

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1- 7/14):	1550	985
(Highland 1/1-7/14):	1882	1220

Coming Events:	**Ranges:**	
Comstock mealybug 1st flight peak	1528–1782	981–1185
American plum borer 2nd flight begins	906–1876	973–1337
Apple maggot 1st oviposition	1566–2200	1001–1575
Codling moth 2nd flight begins	1355–2302	864–1549
Dogwood borer peak catch	1551–1952	986–1306
Oriental fruit moth 2nd flight peaks	1000–2908	577–2066
OBLR 1st flight subsides	1420–2452	899–1790
Redbanded leafroller 2nd flight peaks	1479–2443	952–1698
STLM 2nd flight peak	1295–2005	824–1355
STLM 2nd gen. tissue feeders present	1504–2086	952–1201
San Jose scale 2nd flight begins	1449–1975	893–1407
Peachtree borer flight peaks	864–2241	506–1494

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