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Update on Pest Management and Crop Development

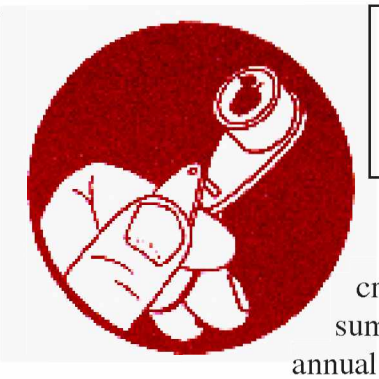
F R U I T J O U R N A L

July 25, 2011 VOLUME 20, No. 19 Geneva, NY

INSECTS

A DULL ROAR

ORCHARD RADAR DIGEST



[M = Marlboro, Ulster Co.; G = Geneva]

Roundheaded Appletree Borer
Peak RAB hatch: July 10 to 29 [G].

Dogwood Borer
Peak DWB hatch roughly: July 21 [M]/July 31 [G].

Codling Moth
CM development as of July 25: 2nd gen adult emergence at 75% [M]/39% [G] and 2nd gen egg hatch at 36% [M]/8% [G].
2nd generation 7% CM egg hatch: July 24 [G] = target date for first spray where multiple sprays needed to control 2nd generation CM.
2nd generation 30% egg hatch: July 24 [M]/August 2 [G] = target date where one spray needed to control 2nd generation CM.

White Apple Leafhopper
2nd generation WALH found on apple foliage: July 24 [M]/August 3 [G].

WHAT'S UP?

DOCK PATROL (Art Agnello, Entomology, Geneva)

❖❖ The dock sawfly always creeps in during the waning days of summer. Following is a repeat of our annual write-up on this pest:

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 graders sometimes attribute this damage to apple maggot or European corn borer, cutting open these apples reveals a bright green worm with a light brown head, 3 pairs of true legs and 7 pairs of prolegs, not feeding but lying inactive, in the burrow extending in from each hole. These are

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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 generally 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 one or two are 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.

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.)

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FLARE-UPS

MIGHTY HOT
(Peter Jentsch, Entomology, Hudson Valley Lab, Highland)

❖❖ During the last few weeks, we've seen little in the way of rain, while temperatures flirt with triple digit highs. This hot and dry weather has been favorable for mite survival and proliferation in the Hudson Valley. The use of conventional fungicide and insecticide tools in pome fruit management programs all too often plays a role in contributing to mite flare-ups. We have observed the use of multiple post-bloom applications of manzate to substantially reduce phyoseiid mite populations that can keep European red mite (ERM) and twospotted spider mite (TSSM) in check. As a consequence of the loss of constraints imposed by phyoseiid mites, we've also observed increases in phytophagous mite numbers. ERM and TSSM feeding reduces leaf photosynthesis, leading to reduced fruit size, color, return bloom and set. Consequently, mites should be managed early, prior to significant leaf injury. While this all sounds good on paper, what is meant by "significant leaf injury"?

Early season (before July 1) mite injury is more severe on trees than late season injury. Apple trees "increase in tolerance" as the season progresses, so to speak, and so progressively higher mite populations can be tolerated later in the season. So, now as we approach August, the mite threshold increases from 5 to 7.5 mites per leaf. Research conducted by Nyrop and Reissig found that cumulative mite day values of 750 to 1000 that accumulated after June 15, were observed to cause no measurable effect on yield or fruit quality during the year damage occurred or during the following year. (A mite day is the cumulative measure of mite density through time; an average of one mite per leaf for ten days yields ten mite days, as does ten mites per leaf for one day.) Furthermore, no effect of mite injury was found when this level of mite feeding was sustained for two years on the same trees. However, a cumulative mite day measurement of 750 CMD through the season produced slight but noticeable leaf damage or bronzing. It also corresponds to a peak mite density of approximately 30 mites per leaf. See the full report on this work at http://fls.cals.cornell.edu/OCRPDF/123.pdf.

The choice of miticides then becomes the issue once mites begin to build. We've had a few new miticide registrations in NYS over the past 10 years, such as Kanemite 15SC and Portal 0.4EC. Both of these materials act as mitochondrial electron transport system inhibitors (METIs), which inhibit cellular respiration (as does Nexter). This new chemistry should be limited to one application/year to reduce the resistance development potential in this group. These products have activity against all motile stages of mites: larvae, nymphs, and adults, but lack ovicidal activity against the egg form. In field observations, it has become apparent that the efficacy of these miticides relies heavily on contact exposure, a near-impossible task, given the amount of foliage on the trees by late July.

We often see a shift in mite populations at this time of year, from ERM to TSSM. Remember that TSSM causes higher levels of damage than ERM, and the use of more conservative threshold levels should be employed for this species. Miticidal efficacy is shown in the table below. We presently have no less than 10 miticides, plus a number of highly refined horticultural oils to work with on apple; however, Kanemite, Nexter and Portal are METI-based modes of action, only one of which should be used one time during a season. Onager and Savey have the same active ingredient, and are limited to one application per season. So, realistically, we only have the option of 6 miticides for mite management if we adhere to resistance management guidelines.

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Table 1. NYS summer miticides options post petal fall.

Miticide Formulation	Rate/ Acre	Re-entry Interval	Pre-Harvest Interval	Apps /season	0-3 adult activity ERM / TSSM / ARM
Acramite 50WS	0.75–1.0 lb/A	12 hours	7 days	1	2 / 3 / 1
*Agri-Mek 0.7SC	2.25–4.25 fl oz/A	12 hours	28 days	2	3 / 3 / 3
Apollo 4SC	4–8 fl oz/A	12 hours	45 days	1	3 / 1 / 1
Kanemite 15SC	31 fl oz/A	12 hours	14 days	2	3 / 3 / -
†Nexter 75 WS	4.4–5.2 oz/A	12 hours	25 days	1	3 / 2 / 2
Onager 1EC	12–24 fl oz/A	12 hours	28 days	1	3 / 1 / -
Portal 0.4EC	1–2 pt/A	12 hours	14 days	2 (post PF)	3 / 3 / 3
Savey 50DF	3–6 oz/A	12 hours	28 days	1	3 / 1 / -
*Vendex 50WP	1–2 lb/A	48 hours	14 days	3 (post PF)	1.5 / 2.5 / 2
Zeal 72WS	2–3 oz/A	12 hours	14 days	1	3 / 3 / 0
§Horticultural oils	0.5–2 gal/100 gal.	12 days	0 days		3 / 2 / 2

*Restricted-use pesticide, † Not for use in Nassau and Suffolk Counties. § potentially acceptable in certified organic programs. 0–3 activity: 0 = none, 1=poor, 2=fair, 3=good

In a study conducted in 2007 on a running ERM population, we trialed 10 miticides, applied 5 days after petal fall, on 16 yr-old Red Delicious. Pre-treatment populations averaged 4.7 ERM adults/ leaf on 19 May. Single application handgun treatments delivering approximately 400 GPA were applied to drip. Shown in the graph are Cumulative Mite Days (CMDs), evaluated by sampling 25 leaves from each plot from 19 May through 11 July.

Given the results of this study, Onager 1EC, Zeal 72WS, Savey 50DF and Agri-Mek/oil performed well, maintaining low CMDs up to mid-July. The lackluster performance of Nexter was attributed to high water pH, measured post-application to be 8.2, obviously critical to Nexter's efficacy. Envidor, not labeled in NYS, followed by Acramite, Danitol and 1% Damoil reduced populations compared with the untreated controls. Carzol, not labeled post-petal fall, performed poorly.❖❖

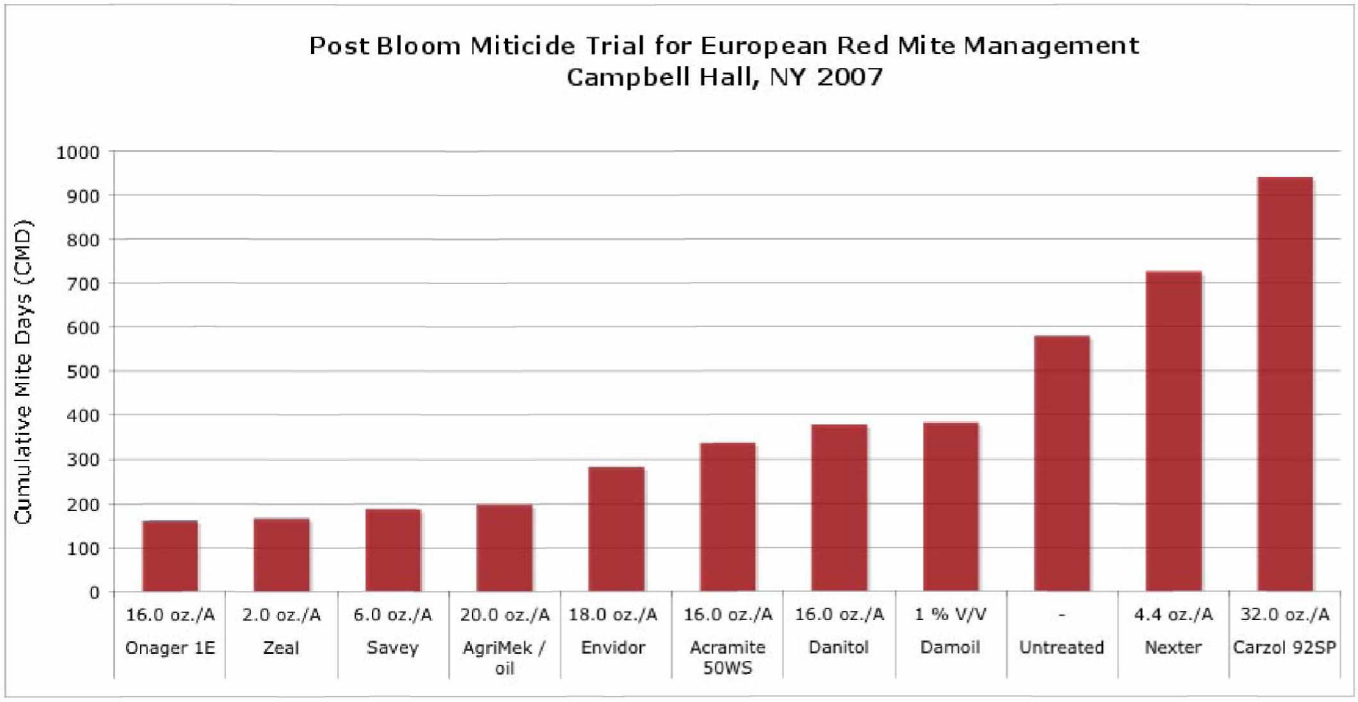

Fig. 1. Cumulative Mite Day evaluation of miticide treatments made in 2007.

GENERAL INFO

ON TOUR

EVENT REMINDERS

CORNELL COOPERATIVE EXTENSION LAKE ONTARIO SUMMER FRUIT TOUR
Wednesday, August 3, from 7:45 am
Registration at Lamont Fruit Farm, Stillwater Rd., Waterport, NY

❖❖ Don't miss this tour for commercial fruit producers and supporting businesses. Featuring super spindle, tall spindle and V-axe apple planting systems, equipment innovations for improving labor efficiency, sprayer technology, new pest management technology, weed management, and all about sweet cherries in Orleans and Niagara Counties. Join 250 growers, Cornell faculty, and many supporting business representatives for the day. Chicken BBQ lunch, courtesy of industry sponsors and donors.❖❖
Free attendance, but PLEASE RSVP by July 27 to Kim hazel (585-798-4265 x26 or krh5@cornell.edu).
Program: http://www.fruit.cornell.edu/lof/events/2011_summer_tour.pdf

WAYNE COUNTY FRUITGROWER TOUR
Wednesday, August 10, from 10:00 am
Registration and 1st stop at Morgan Fruit Farms, Goosen Rd., Marion, NY

❖❖ Sponsored by agr.assistance, this large, informative and entertaining tour is in its 13th year, and will feature presentations on apple storage; PGR, return bloom, improved fruit finish, rootstocks, wind and solar energy technologies, GAP compliance; updates on apple disease, insect, and deer control, herbicide programs; bitter pit; herbicide options, plus much more. Door prizes, lunch, some levity, a BBQ/clambake dinner with a live band, growers and industry representatives from NY and surrounding states — tough to beat on a midsummer day. Free attendance.❖❖
Contact Lindsay LaMora (585-734-8904; lindsaylamora@agrassistance.com) for RSVP pre-registration and tour information.

PEST FOCUS

Western NY: **Apple maggot** 1st capture in Pultneyville, July 20; and South Sodus, July 23 (J. Eve).

Highland: Relatively high populations of **European red mite** observed.

INSECT TRAP CATCHES
(Number/Trap/Day)

Geneva, NY

	7/18	7/21	7/25
Redbanded leafroller	0.6*	1.5	1.3
Spotted tentiform leafminer	3.7	8.2	8.0
San Jose scale	12.4*	9.5	13.8
Oriental fruit moth	0.0	0.0	0.0
Lesser peachtree borer	0.0	0.0	0.0
American plum borer	0.0	0.2	0.1
Obliquebanded leafroller	0.0	0.0	0.0
Apple maggot	0.2	0.2	0.5

Sodus Center trap catches:	7/15	7/19	7/22
Oriental fruit moth	1.5	2.5	3.5
Lesser appleworm	0.5	1.0	0.5
Codling moth	0.5	1.0	0.5

* first catch

Highland, NY

	7/18	7/25
Redbanded leafroller	0.9	0.6
Spotted tentiform leafminer	24.4	39.0
Oriental fruit moth	3.1	3.8
Lesser appleworm	0.6	1.6
Codling moth	1.9	2.7
Obliquebanded leafroller	0.5	0.2
Apple maggot	0.0	0.4

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–7/25/11):	2273	1582
(Geneva 1/1–7/25/2010):	2406	1671
(Geneva "Normal"):	2053	1356
(Geneva 1/1–8/1 Predicted):	2500	1762
(Highland 1/1–7/25/11):	2399	1651

Coming Events:	Ranges (Normal ±StDev):	
Apple maggot flight peak	2104–2542	1413–1743
Codling moth 2nd flight peak	1931–2735	1278–1892
Oriental fruit moth 2nd flight subsides	2049–2515	1358–1752
Oriental fruit moth 3rd flight begins	2315–2735	1569–1889
Redbanded leafroller 2nd flight subsides	2192–2668	1482–1830
Spotted tentiform leafminer 3rd flight begins	2246–2644	1502–1832
San Jose scale 2nd flight peak	2115–2503	1422–1752
American plum borer 2nd flight peak	1976–2544	1328–1748
Comstock mealybug 2nd gen. crawlers peak	2380–2624	1658–1737
Lesser appleworm 2nd flight peak	2131–3105	1422–2156
Obliquebanded leafroller 2nd flight begins	2255–2655	1516–1838

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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