



NH Integrated Pest Management Newsletter

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Volume VI

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Hours of Apple Leaf Wetness: Summer Diseases

As I mentioned in the [last issue](#), it takes 270 hours of leaf wetness after petal fall (HLWAPF) for each generation of the fungus to be completed. The figures for Durham June 28th were 238 hours. As of July 12 they had increased only slightly, to 264.5 hours.

Blueberry Maggot Trap Comparisons Are Underway

George Hamilton, Hillsborough County Agriculture Resources Educator, and I are comparing 4 trap setups, thanks to an IPM grant from the [NH Department of Agriculture, Markets and Food](#). In June we set out:

- 1) red sticky spheres
- 2) green sticky spheres with odor enhancers
- 3) vertically hung yellow rectangle AM traps
- 4) V-position yellow rectangle AM traps

Preliminary data suggest that the most effective of these trap choices are the V-position yellow rectangle trap, and the green sphere with an odor enhancer. When the season is done, I'll have lots of data to compare these, and I'll be able to say more. We are planning evaluations of the fruit, to learn if there are maggots in them.

Cyclamen Mites on Strawberry

A couple weeks after renovation is the ideal time to control cyclamen mites, if they are a problem in your strawberries. Why then? Cyclamen mites live deep in the crowns of the plants. After renovation is when there is relatively little vegetation to block getting the stuff down deep, where the critters are. You also need to use high gallonage, and a wetting agent. All these are to improve the chances the pesticide will get down to them. The New England Small Fruit Pest Management Guide lists Thionex 3EC and Kelthane 50W as registered for this purpose.



What does the injury look like? New, emerging growth comes out twisted, distorted, stunted, sometimes purplish. If you want to find the mites, you'll need really good light, plus very good magnification. Sometimes you can see the oval mites with a 20X lens, but usually I require a microscope. They rarely are visible on the exposed foliage. Usually I find them deep in the crowns.

Black Vine Weevil --- Strawberries

In an [earlier issue](#) I mentioned that there are basically three choices to deal with a significant black vine weevil (BVW) problem in strawberries:

- 1) scorched earth policy
- 2) spray with Brigade
- 3) treat with insect-attacking nematodes

Here are more details.

Scorched earth method. Thoroughly disc up the infested bed, and move your new strawberry planting far away. If you can, 200 yards would be good. The surviving adults will walk to new homes, and the farther away you place the new bed, the fewer of them will find it. Research in Ontario proved that the adults keep active well into the fall. By the way, if you have to locate it closer, you might be able to keep them from getting into the new bed by erecting a fence of plastic sheeting (1 foot high is usually enough) completely around the new bed. The plastic must be embedded in the soil, and if it gets covered with dusty soil, it is even harder for them to climb. Remember --- they cannot fly. Another choice is a tar paper barrier 6 inches high, with the top 1 inch covered in tangle trap. Yes, these work, but it is really difficult to do properly, and keep up constantly from July through November. Every time you want to drive equipment into the field, you'll have to fix the barrier. Yes, I agree that it is logistically very difficult. Now, back to the "scorched earth" part - you want to be sure that no plants on which the larvae can survive will grow in the site you disked up. That means for the next year (two years is better). This can be a bit tougher than it sounds, because several common weeds can support the larvae.

My list of the species to keep out includes: Achillea, Adiantum, Asters, Astilbe, Azaleas, Begonia, Bergenia, Blackberry, Calla lily, Christmas fern, Cinquefoil, Cyclamen, Dandelion, Dock, Epimedium alpine, Epimedium grandiflora, Hemlock, Heuchera, Hosta, Hydrangea, Impatiens, Isoloma, Lily of the Valley, Lythrum (loosestrife), Mountain-Laurel, Phlox, Physostegia, Plantain, Primrose, Raspberry, Rhododendron, Rhubarb, Sedum acre, Sheep sorrel, Strawberry, Wood sorrel, Taxus (yew).

Spray with Brigade. This material is registered for use on BVW, but lab tests (Connecticut I think) showed that many of the "dead" weevils recover a day or so later to eat and lay more eggs. It is nice that it has a zero day to harvest interval, but it also tends to create serious mite problems (by killing off the predator mites). We haven't had an effective insecticide for this since registration for Furadan was lost, years ago.

Use Insect-attacking nematodes. This can be effective, but you really have to work hard to find a supplier of nematodes of the correct species, at less than sky-high price. The correct species, rate, and timing are all critical. The proper time to apply nematodes is mid-May or August 25 to Sept 7. **It is critical to do this late in the day, and water them in immediately.** Avoid doing it in hot weather and dry soil, because nematodes die in just a couple of minutes if they dry out. Nematode suppliers are all over the country, and it REALLY pays to search hard for a supplier who offers a less-than-sky-high price. Some suppliers offer a mix of two species, but then don't tell you what % of the mix is what species. That makes it impossible to know if you're using the correct rate. It is critical to use the correct species and rate. Some species of nematodes go deeply into the soil, while others stay near the soil surface. The species you want for black vine weevil control are: *Heterorhabditis*

bacteriophora, *Heterorhabditis megidis*, or *Steinernema feltiae*. When you are ready to apply them, triple rinse the sprayer first, and remove the screens from the sprayer (you want to spray, live, whole nematodes, not chopped up pieces of nematodes!). Moisten the soil before applying the nematodes. Use low pressure, and some agitation, so they don't settle to the bottom of the tank. The correct rate for *Steinernema feltiae* is 3 billion per acre. For the other species, 1 billion per acre is acceptable.

Apple Maggot

Like so many other things, these started early this year. In some blocks (especially those with early varieties, or with unmanaged apple trees nearby) we see relatively high numbers of flies early in the season. In others, we see them build up later in the season.

The traps we set for apple maggot are to monitor their numbers and the pattern of activity over the season. If you catch a cumulative average of 1-2 apple maggot flies per trap, it is worth applying an insecticide to control them. This threshold is for the red sphere traps, with no odor lures added. There are "odor enhancers" or "superchargers" available that greatly increase the catch. But my limited work with them suggests that the catch is more variable with them, between 2 and 10 times higher. So to me that means the threshold should be 2-10 times higher if you use the superchargers. That would mean an average of 2 to 20 flies per trap --- what a huge range! That's why I like the simplicity of the **unbaited** red sphere trap. I think it is simpler and more reliable.

I repeat this every year, but I'll do it again. The traps basically mimic a large apple, **so they must be very visible --- not buried deep in dense vegetation**. For apple maggot, I like to have them at head height. Higher can catch more apple maggots, but is much harder to check (remember, you'll be examining these at least once a week). Ron Prokopy's work also showed that the traps are more effective if there are fruit within 18 inches to the side and/or below.

I use a twig to remove the apple maggot flies as I count each time (I do mine twice a week). If the trap gets too heavily covered with debris, I scrape off as much as I can, and re-apply the tangletrap.

Identification fine points. The wing band pattern is shown in [last week's newsletter](#). A female will have an abdomen that is pointed at the tip, and has 4 narrow white bands. A male has only 3 white bands, and the tip of the abdomen is blunter. The sex of the fly doesn't matter with regards to the threshold.

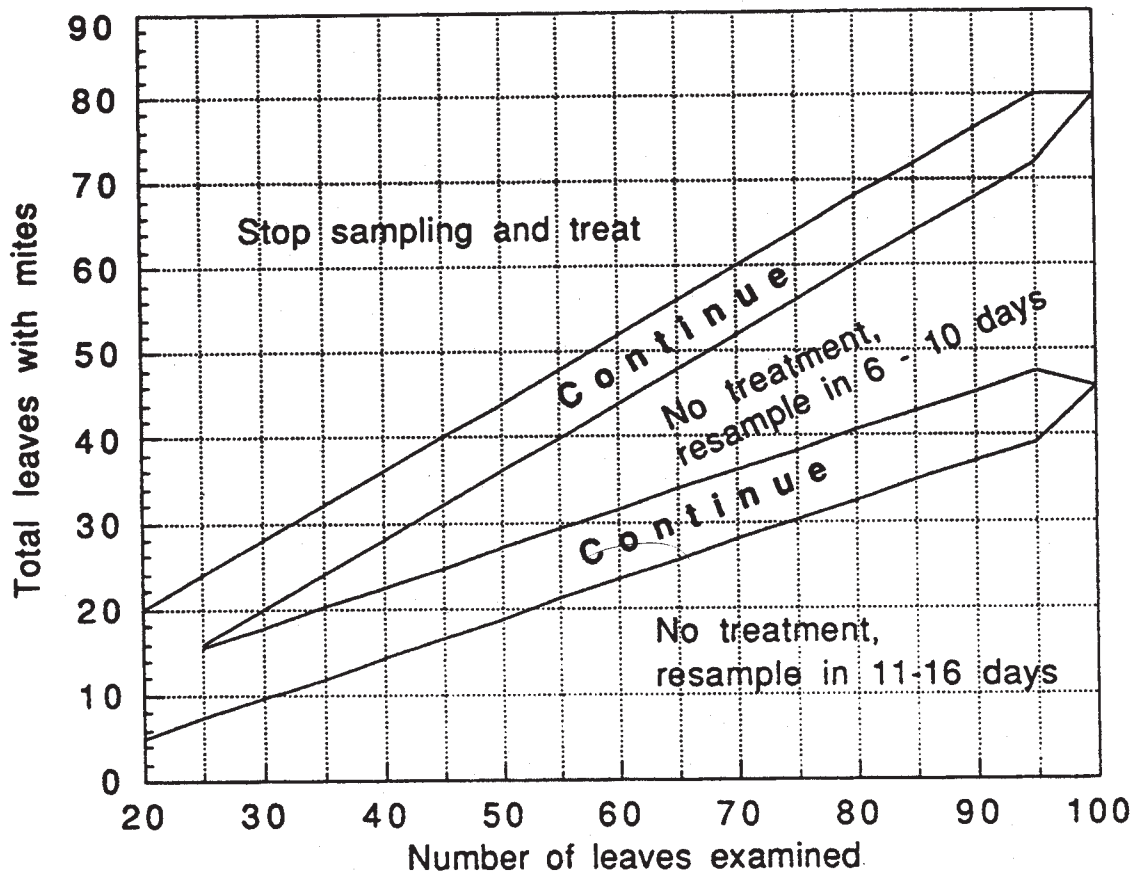
Mites on Apples

As we move later in the season, apple trees are able to tolerate higher numbers of leaf-feeding mites. If you compare today's chart with the one from the [previous issue](#), you'll see that the counting procedure is the same, but the threshold is slightly raised now.

We usually find European red mites on apples, but occasionally Two-spotted spider mites are a problem as well. Rarely, we have problems from rust mites. Apple rust mites are so very tiny, we don't recommend counting them. They are elongated, less than 1/10 millimeter long, so usually you need a microscope to see them. The threshold for them is several hundred per leaf (300 I think, but who's counting?).

Mite Threshold chart for July 15 to August 15 is on the following page.

Mite Sampling Chart - Threshold = 5.0 mites/leaf (July 15 - August 15)



* This procedure involves examining middle aged leaves for motile mites (any stage except eggs). Use this chart, which corresponds to a mite density of 5.0 mites per leaf, from July 15 until August 15. You will not be counting mites, but will only determine whether they are present or absent on each leaf sampled.

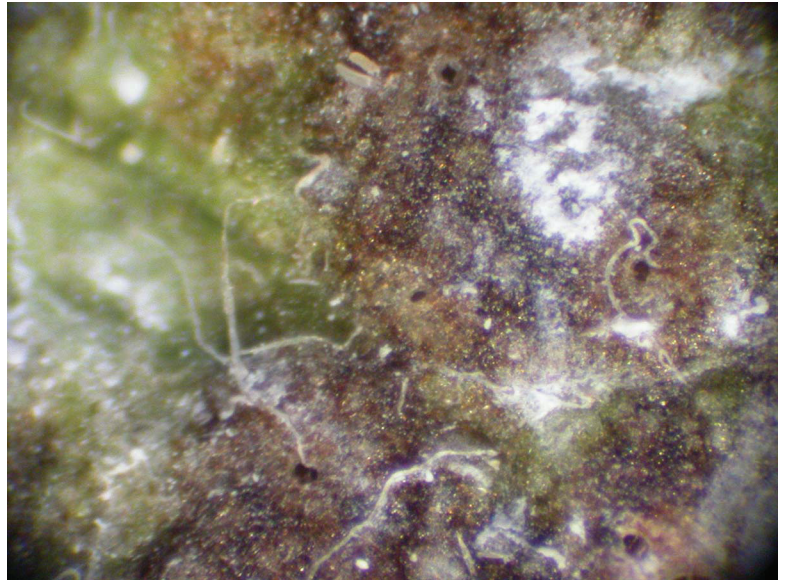
* Starting with a random tree and sampling every other tree, collect 4 leaves in a plastic bag from each of 5 trees, choosing from each quadrant of the canopy. To make sure the leaves are of intermediate age, pick them from the middle of the fruit cluster or foliar terminal.

* Using a magnifier, examine the top and bottom surface of each leaf for motile mites and keep track of the number of leaves containing motile mites. When all 20 leaves have been examined, compare this number with the decision lines on the above chart. If you are in either of the "Continue" zones, take more leaf samples in batches of 10 (5 per tree, for simplicity), adding the number with mites present to your original value while checking the chart again. Continue until you have passed out of the "continue" zone to arrive at a decision. If you reach "Stop sampling and treat", the population is above the threshold and a miticide application is recommended. If you reach one of the "Resample" zones, the population is below threshold, and should remain so for at least the number of days stated. Return at the designated time and conduct another sample. If "6-10 day" resample date falls during 7.5 mites/leaf Threshold period, you can wait for a total of 11-16 days before resampling.

Modified from: Apple IPM; A Guide for Sampling and Managing Major Apple Pests in New York State. Agnello, A., J. Kovach, J. Nyrop, H. Reissig, W. Wilcox.

Pear Leaf Blister Mite

Carl Majewski, Cheshire County Agriculture Resources Educator telephoned on July 2, describing pear leaves that had dark spots on them. When he looked at the undersides of the leaves under magnification, he found some tiny openings in the spots, and whitish, elongated critters crawling on the surface. Carl sent me this fine photo. The whitish things are the mites. That's right, some mites (rust mites are other examples) are elongated, almost worm-like. They're really tiny --- under a tenth of a millimeter long.



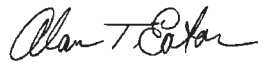
With this unusual season, we are finding a lot of reports of oddities. This mite is usually not a problem on commercially grown trees. It is more common on backyard trees. Management is usually through an insecticide application in the fall (post-harvest), and/or a thorough, careful application of superior oil in the spring, when pear buds are swelling, but before green tissue appears.

Meetings

*Wednesday July 14, 2010. **Tree Fruit Twilight meeting.** UNH Woodman Horticulture Farm. 5:15-8:00pm. 70 Spinney Lane, Durham. UNH Cooperative Extension and the NH Agricultural Experiment Station are hosting this event. Among the speakers are Dr. David Rosenberger [Plant Pathologist, Hudson Valley Lab] and Janice Barnes [Field Claims Specialist, Rural Community Insurance Services] 2 PAT recert. credits are offered.*

*Wednesday July 21, 2010. **Organic Apple Tour.** Highmoor Farm, Monmouth, ME. 9:30am-12:00pm. This is an opportunity to see U Maine's research in this area, and hear from Dr. Lorraine Berkett from UVM, who is also working on organic apples. For more information call 1-207-933-2100 x 105.*

*Wednesday July 28, 2010. **Maine Pomological Society Summer Tour.** 9:00am -3:30 pm. Lakeside Orchards, Manchester ME. I understand the lunch cost will be \$10. For more specific directions, visit the following website: http://lakesideorchards.com/maps_to_orchards.html. The physical address for the orchard is - 318 Readfield Road, Manchester, ME 04351-3218. Phone Number - 1-207-622-2479.*



Alan T. Eaton
Extension Specialist
Integrated Pest Management