



## NH Integrated Pest Management Newsletter

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### Japanese Beetles (on Lots of Crops)

Those darned Japanese beetles chew on the foliage of many crops now. Among the fruit leaves they like are apple, peach, plum, cherry, raspberry, blackberry, grape and blueberry. As ripe fruit become available, they help themselves to plums, peaches, raspberries and sometimes blueberries. Whether or not you spray for the adults isn't a straightforward decision. If harvest is underway, then the days-to-harvest interval is a significant consideration. Some of our effective materials (Sevin is one example) can have long DTH intervals for some crops. Those pesticides with extremely short DTH intervals tend to be products that don't control the beetles very well.

Effects of sprays on beneficial insects and mites should be a concern. One year the Japanese beetles were so bad at the Woodman Horticulture farm, that we went ahead and sprayed the apple orchard with Sevin. That spray was followed by a sharp increase in woolly apple aphid numbers on the shoots --- more than we had ever seen before. I checked and noticed that very few were parasitized. Normally above-ground colonies of woolly apple aphid are kept down by a tiny parasitic wasp that hits this species. Sevin is well known to really harm Hymenoptera (like these parasites). I concluded that we nuked the parasites and created the woolly aphid problem. We never sprayed the apples since for Japanese beetles (it's been 7 years, I think), and haven't had another woolly apple aphid outbreak. Woolly aphid colonies that I do find are heavily parasitized again. So when people ask me now about spraying for Japanese beetles, I suggest they do so if defoliation (or crop injury) is significant. Otherwise, don't bother.

What about traps to control Japanese beetles? Research a few years ago showed that they attract many more beetles than they catch, thereby **increasing** the population. So, please, don't waste your money on them.

By the way, if you have lots of Japanese beetles in a spot where you can do handpicking, you can very quickly pick hundreds. I use two milk jugs taped together at the neck, with the bottom cut out of one, to form a funnel. Place a little soapy water inside. Go to your infested plants **in the morning, when it is still cool**. Place the funnel under the infested branch, tap firmly to dislodge them, and voila! Dozens of them fall in and drown.



## **Flyspeck on Apple**

I wrote several paragraphs on flyspeck in the last issue, and I hope you're thinking about it this fungal disease during July and August. No one needs anything as intense as a weekly spray regimen. You may get by nicely with a fungicide spray every 3 weeks, provided you use fungicides that are effective. I think last year's heavy flyspeck problems had a lot to do with heavy rains in August and September, combined with growers not thinking about flyspeck. What fungicides work well? Check table 12 in the New England Apple Pest Management Guide (pg 85). Those with good or excellent ratings include protectants like Captan and Ziram ("good" rating). Topsin-M has protectant and some eradicant activity ("excellent" rating). The strobilurins Flint, Pristine and Sovran are effective eradicants ("excellent" rating).

**Sooty blotch** is another fungal disease that often occurs with flyspeck, but usually is much less severe. It seems to require the same growing conditions, and seems to be controlled with the same fungicides. On darker colored varieties, I don't see sooty blotch very often. It is much more visible on yellow or greenish varieties.

I'll take this opportunity to distinguish between **sooty blotch** and **sooty mold**. The latter is a surface mold that grows on sugary secretions or droppings (like honeydew) on the surface of leaves and/or fruit. Sooty mold washes off fairly easily, and isn't a problem unless you have lots of scales, aphids or mealybugs (which are sources of honeydew). For the most part, preventing sooty mold is just based on keeping down the populations of insects that produce honeydew.

## **Apple Maggot**

Apple maggot numbers and timing vary from orchard to orchard. Orchards with lots of early apple varieties seem to get hit early, and those with late ones seem to experience the opposite. Usually I think of August as the peak AM period. My traps are out now, and so far catch is zero. This is normal for the Woodman Horticulture farm, where we typically have light pressure from AM, and I usually don't catch any until August. Only a short distance away is an orchard where flies usually appear early.

Have you ever tried adding Nu-Lure to your apple maggot spray? If you have high pressure or want to stretch intervals to their maximum, this may help. It is a feeding stimulant. Some components in this stuff volatilize, and are detected by the flies. Others just stay on the surface where they were sprayed, and are "tasted" by the feet when the flies land. Females may be especially attracted. Read more about Nu-Lure under Blueberry Maggot, farther down in this newsletter.

## **Spotted Tentiform Leafminer and Apple Blotch Leafminer**

We have three generations of these insects each season. The first two are the ones where we might consider applying controls. The third generation comes too late to make it worthwhile to control. The first generation is quite synchronous, and the second is a bit more spread out. Now adults of the second generation are flying and laying eggs. Shortly the new sap-feeding mines will be visible on the undersides of leaves. They look slightly silvery when tilted in the light, because the young caterpillars are feeding on the tissue that connects the lower epidermis layer of the leaf to the middle layers. How many mines per leaf is enough to recommend spraying? Well, if you specifically treated for leafminers in the first generation, it would be very unusual to require treatment for the second generation. I've only run into this when someone incorrectly applied the first treatment, so it didn't

work. If you have 200 or more sap-feeding mines out of 100 leaves, that is enough to make it worthwhile to spray this generation. For McIntosh, the threshold is 100 mines per 100 leaves. The reason for the lower threshold is that McIntosh is especially vulnerable to pre-harvest drop when suffering leafminer injury. More details about sampling and pesticide choices are on page 36 of the New England Apple Pest Management Guide. Photo 59 (page 63) shows what the sap-feeding mines look like. Remember, this generation isn't as synchronous as the first, so if you find few mines, you may need to check again after a week.

## **European Red Mite and Two-Spotted Spider Mite**

Hot weather is when the life cycles for these two mites are really short. That means they can build up in numbers fairly quickly. It pays to check mite numbers every 2 weeks, especially in blocks or varieties that are prone to mite buildup. In my experience, that includes varieties like Delicious, Golden Delicious, Gala, Gingergold and Honeycrisp but not so much McIntosh and Cortland. Mites pierce the surface cells of leaves and cause them to look slightly brownish. When LOTS of cells are attacked, the foliage takes on a bronzed look that is visible for many yards to the trained observer.

Last month I attached the July mite sampling chart, with instructions. In August, I'll include the late summer chart, which is slightly different. The reason we have slightly different thresholds over the summer is that the trees can tolerate more mites per leaf in late summer than they can earlier in the year.

We have several natural enemies of mites in our orchards. The most effective ones are predator mites. It takes a bit of mite searching to be able to distinguish the predators from the pests. Most growers don't sample enough to find this information useful, so I won't put photos here. If you're interested, look at the color photos (figures 63,64,65) in the New England Apple Pest Management Guide. Color is not very useful to tell them apart (predators take on the color of their food), but SHAPE is a good clue. Our most common predator mites are pear shaped. Behavior is another clue. Expose a predator mite to bright sunlight, and it usually runs. Yes, runs. Plant-feeding mites don't need to move much to catch their food, but predators do!

For the last 20 years or so, I have been emphasizing that we should try to protect predator mites by avoiding pesticide use that is detrimental to them. That's one reason we include such information in the detailed descriptions of the pesticides. Please keep this in mind when you make pesticide selections! Today we have quite a few miticide options for apples. I may have forgotten one or two, but I listed summer miticide choices in the last issue of the newsletter (check it online).

## **Potato Leafhopper**

If you find leafhoppers on apple right now, they could be either potato leafhopper or white apple leafhopper. Both are here. Potato leafhoppers are present as adults and nymphs now. White apple leafhoppers are mostly in the adult stage now. Soon I expect to find WALH nymphs again. I covered leafhoppers earlier, so I don't need to go into much detail. Potato leafhopper isn't much of a concern to me on mature trees, but it can be a concern on young trees (because of the stunting of shoots caused by PLH feeding). One treatment of Sevin a while ago at the Woodman Horticulture Farm seems to have nailed our heavy white apple leafhopper population.

## **Brown Rot on Stone Fruit**

As the fruit ripen, they become very susceptible to brown rot (particularly the last three weeks prior to harvest). This is true for all stone fruit --- peaches, plums, nectarines, cherries. Pesticide choices to protect the fruit vary between crops, so I'll let you check out the details yourself. On peaches, brown rot fungicides for pre-harvest fruit protection include Captan, Indar (not on plum), Elevate, Orbit, Pristine and Elite (not on plum). If you have several varieties in the same block that ripen over an extended period, and you are using Indar, Orbit or Elite, it is wise to rotate these materials with Captan or Pristine to avoid resistance problems. Here's a link to the New York Commercial Tree Fruit Guide.

<http://www.nysaes.cornell.edu/ent/treefruit/> Thank you Cheryl Smith for correcting this paragraph!!

## **The Easiest Time of Year to Spot X-Disease is Very Late July**

You remember X-disease, right? It is a fatal disease that hits **peaches and sweet cherries**. The only options we have to control it are preventative. The causal agent is a phytoplasma, which is transmitted to the trees by certain species of leafhoppers. The source of the organism is infected choke cherries (or infected sweet cherries). I recommend eliminating all chokecherries within 500 feet of your peach or cherry blocks. If you can't accomplish that, at least eliminate the infected ones. How do you identify them? In late July they stand out from nearly all other shrubs because they have yellow-green leaves, with shot-holes. Some that have advanced disease symptoms will show bronze-colored leaves. A shot of herbicide on the offending bush, and it is history. When I used to grow peaches, I used glyphosate on nearby chokecherries.

What do X-diseased peach trees look like? Well, the older leaves get shot-holes that have reddish ragged edges. Then the older leaves fall off, leaving just a tuft of young leaves on the diseased branch or limb. This combination of symptoms is unique to X-disease.

## **Raspberry Cane Borer**

I couldn't resist the opportunity to show the injury and the culprit in a photo. This insect is controlled by pruning out infested canes. If LOTS are hit, you might prefer to prune just below the double girdle, as soon as you notice it. Destroying nearby unmanaged brambles also helps. No, don't bother to spray for this one. You might do more harm than good. The adults (beetles) are active now, and should be around a bit longer. If you have many canes that are hit, see if you can eliminate nearby unmanaged brambles, which are the source. This insect has a two-year life cycle.



## **Blueberry Maggots**

Blueberry maggot flies look like miniature versions of apple maggot. For many years they were thought to be a strain of apple maggot until it was proven they are a distinct species. Some blueberry plantings are heavily hit, while others can be heavily infested. My observations suggest that those with significant BM problems tend to be those where the manager doesn't bother with controls (or monitoring). This

critter hits both highbush and lowbush blueberries. In the last issue, I showed you where and how to set up the traps. This time, I'll talk a bit about controls.

There are several pesticides registered to control BM. Included on this list are Imidan 70W, Asana XL, Lannate SP, Sevin XLR plus, Sniper 2E, Aza-Direct, Pyrenone Crop Spray and GR-120 Naturalyte Fruit Fly Bait. There may be other pesticides and formulations that are registered. Malathion 5EC is still registered in combination with Staley's Sauce Base 7. I don't think the sauce base is available any longer, but an effective substitute is here, called Nu-Lure.

Nu-Lure is hydrolyzed corn gluten meal. Some flies (especially females) readily feed on it. Many flies have taste receptors on their feet, so they can taste sugars, proteins, salts (and other things) when they land. Combining this with a stomach insecticide is an effective way to get very high kill rate. The label shows that it has been found to work with Sevin, Imidan, Guthion and Malathion (plus Orthene, which isn't used on food crops). I also learned that it has been successfully tried with Spinosad and Entrust. You won't find Nu-Lure when you check the NH pesticides registration database (link is on NH Dept Ag, Mkts & Food website) because it isn't a pesticide; it is a spray additive. Miller Chemical & Fertilizer Corp. is the manufacturer. This doesn't work on many insects, but is very effective for some flies (apple maggot, blueberry maggot, cherry fruit fly, walnut husk fly, pepper maggot (?), onion maggot). No, I don't think it would work on fungus gnats, shore flies, or leafminers. I believe a lot of work on this stuff was done when Mediterranean fruit fly was found in the United States (California was one spot). They wanted to minimize insecticide use, and maximize its effectiveness on the target flies. Raise your hand if you already knew this.

## Yellow-Necked Caterpillar on Blueberry



Yellow necked caterpillar is a species that we find during the summer, eating blueberry leaves. The caterpillars are gregarious, so you seldom find just one or two. If they appear on your bushes, one of the caterpillar strains of *Bacillus thuringiensis* (Dipel for example) is effective at killing them. It has a very short days-to-harvest interval (a few hours I think). The small ones are easier to kill than the large ones. The adults are tan moths with red-brown lines, and they fly in June & July in southern NH (September in the North). They feed on other trees too: birches, elm, oaks, maple, butternut, walnut... They're usually not a serious problem.

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