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COOPERATIVE EXTENSION

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NH Integrated Pest Management Newsletter

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Fruit Bud Stages in Durham

Fruit bud stages are ahead of schedule. When I did my first check of the year (March 30th, usually about this date) everything was advanced: Pioneer McIntosh apple - silver tip; plums (both Eur. & Japanese), peaches, pears, blueberries all were at the swollen bud stage!

On April 12, the fruit buds at Woodman Horticulture Farm were as follows: Pioneer McIntosh apple - tight cluster; Pears - green cluster; Peaches - early bloom; European Plums - burst to green cluster; Japanese Plums - bloom; Blueberry - loose bud scales to pink bud (several varieties)

If you are new to the names of fruit bud stages, I give detailed descriptions of them in issue #2 from 2008. (http://extension.unh.edu/Agric/Docs/IPM4_8_08.pdf) That's on the website, just under where you found this issue or you can click on the link given. Commercial growers could look at the 2010 New England Tree Fruit Management Guide, which has color photos of the stages.

Magnifiers to Help

I've been asked this question enough that I'll include it in the newsletter. There are several tasks in monitoring and identifying insects, where a magnifier of some type would be helpful. I have four types on which I rely, and I'll pass on some tips to you.

1) When I have a task where slight magnification is helpful, and I want to use both eyes, I use a rectangular 2" by 4" 2.5-power magnifier by Ultraoptix. In the corner of the lens is a small 5 power insert, in case you need more magnification. I like this one for looking at sticky traps, searching for aphids, and looking for San Jose scale. It easily fits into shirt or pants pocket, with the handle slightly protruding. The lens is made of plastic, so it can scratch easily, but is light. I believe you can get them for $12 to $15.

2) When I'm planning to look at very tiny things, like mites or thrips, I need more magnification than that. One choice is a folding pocket magnifier with more than one lens. Bausch & Lomb makes one I like, with two large diameter lenses. The lenses are 1.5 inches across. One of them is 4 power, while the other is 3 power. If you look through both together, that makes 7 X magnification. This one folds up completely (no handle to stick out) into a 2" oval shape. It is fairly expensive, about $25 the last time I bought some. One disadvantage of this type is that multiple lens surfaces means more dirt, debris and scratches to impair the image quality.

3) A third type I use is a metal framed 10 power glass lens almost an inch in diameter. I often attach a lanyard, so I can carry it around my neck. It gives enough magnification to see mites fairly well, but is tedious to use if you need to scan large surfaces. Mine cost $12 to $16 each.

4) When I have a task where I need to have both hands free (not holding a magnifier in one hand) I use an optivisor. You wear it on your head, and it has an adjustable head band. There are two lenses, set up like eyeglasses. Mine has 10 power lenses. I use it sometimes when I'm examining greenhouse potted plants.

I recommend NOT buying hand lenses with greater than 10X magnification, unless you carefully try them out before purchase. Usually they have several problems:

1) small diameter lenses are extremely difficult to use if you must scan an area to find something.
2) The distance between the lens and specimen (to keep in focus) is so short, the lens shades the subject. The distance between your eye and the lens is also short, which can be difficult for some people to use.
3) Resolution (sharpness of image) is important, not just magnification. Some cheap ones have poor sharpness and/or chromatic aberrations (rainbow hues at the edges of objects) that interfere.

Lenses that can't fold up (to protect the lens surface) should not go in a pocket with keys, pens, or other things that can scratch them up. Plastic lenses are inexpensive, light, but scratch more easily than glass.

My suppliers: I buy a lot of doublet 10X magnifiers (23mm across) from Great Lakes IPM. They cost about $12, and last a long time…if you don't lose them or give them away, like I do. They're on line at www.greatlakesipm.com Yes, they sell optivisors, multiple lens magnifiers, plus a $20 "field microscope" that I haven't tried. Gemplers also sells magnifiers, and they are at www.gemplers.com They have a larger range of products. Neither of the two above seems to have the rectangular magnifier I like so much. That is from Ultraoptix; they are at www.ultraoptix.com Their catalog shows two versions of the 2 x 4 magnifiers under "handheld specialty magnifiers". They also have various lighted magnifiers. The Bausch & Lomb magnifiers I mentioned above are not available directly from B & L. Retail sales for them are available only through other companies. Great Lakes and Gemplers have some of the B & L magnifiers in their catalogues. There are other places, too. I find magnifiers at drug stores, nature stores, scientific equipment suppliers, and elsewhere.

Apple Scab

The biofix for the apple scab ascospore maturation model is when 50% of the McIntosh fruit buds are at silver tip stage. They were just barely past that stage Tuesday March 30, which was the first day I checked this year. By the time of Friday, April 9ths daytime rain, we in Durham, NH had accumulated 207 apple scab degree days [Base 32 F for apple scab DD] since the biofix. That translated into about 7-8% of the season's supply of ascospores being mature & ready for release then. Orchards to the south were even further along in scab and bud development. With a moderate amount of tissue exposed, I hope you had your orchard protected with a fungicide. For some growers with a very low PAD [potential ascospore dose], you might have been able to skip protecting that period. Here in Durham, it was wet most of the day, and temperatures were in the low 50's, so foliage was wet long enough to initiate scab infection.

As of Monday April 12, we had accumulated 247DD (base 32) in Durham since the biofix. That puts us in the rapid maturation phase for ascospore development; the period when the apple scab risk is high. With plenty of green tissue exposed, any daytime rain will release a lot of spores. If the foliage is wet for long enough, we will get infections started on unprotected foliage.

Tarnished Plant Bug Traps in Apples

White rectangle traps to monitor tarnished plant bug were supposed to go up at silver tip stage. If you've missed that, you won't be able to apply the threshold, but you'll still be able to get an idea which blocks have more (or less) TPB pressure. Traps should be hung at **knee height**, towards the branch tips, over a grassy (not bare) part of the orchard floor. Backyard growers: don't worry about this pest on tree fruit. Commercial growers: if you have a large area of alfalfa or fallow fields, your TPB pressure can be heavy.

For growers who have a strong market for #1 fruit (such as pick-your-own blocks), a cumulative catch of 5 TPB's caught per trap from silver tip to tight cluster makes it worthwhile to spray for TPB. If you haven't reached threshold by tight cluster stage, you could wait and look again at pink. An average of 8 or more per trap by pink would warrant control.

For growers who want to market extra fancy apples, the thresholds are a cumulative catch of 3 and 5 per trap. The number is lower, because the USDA grading system heavily punishes for cosmetic injury. If you do decide to spray for TPB, the 2010 New England Tree Fruit Mgmt Guide has details.

I haven't set out TPB traps at the Woodman Horticulture Farm this year, but I saw several TPB's feeding on buds when I spent 4 hours in orchards on sunny April 3rd. They are most active in warm sunny weather, sand less active in cool, cloudy weather. If you see apple or peach buds dripping colored ooze, that was probably due to TPB feeding.

Leafminer Traps in Apples

Traps to monitor apple blotch leafminer and spotted tentiform leafminer should have gone up at about the ¼ inch green bud stage. They're dark red sticky cardboard rectangles. They should have been stapled or tacked to the south side of the tree trunk, at knee height. If you didn't put the traps up on time, you won't be able to apply the threshold, My traps in Durham caught their first moth before Monday April 5.

These traps tell you **IF** it is worthwhile to apply an insecticide for leafminers. They don't tell you **WHEN** to do it. That is up to you (see below). Here is the **if** part: for **McIntosh**, an insecticide treatment is worthwhile if you get a cumulative average of 4 or more leafminer moths per trap (from silver tip through tight cluster). If you leave the traps up through pink, the threshold is 9 or more per trap. These thresholds are cumulative catches, so if you got your traps up too late, you missed some of the moths, and can't use this. McIntosh is a variety that prematurely drops a lot of fruit when it gets leafminer injury --- it is very sensitive, so that's why the threshold is so low**. For other varieties**, the thresholds are 8 moths or more (silver tip through tight cluster stage) and 21 moths or more (silver tip through pink stage). In Durham, my two traps were **loaded** with leafminer moths (well above threshold) when I checked them on April 8. As of Monday, the totals were 92 and 39 moths!

If you plan on applying RETAIN to your McIntosh trees, you can use the same threshold as for the other varieties. Retain counteracts McIntosh's tendency to drop fruit in response to LM injury.

WHEN to Spray Apples for Leafminers

If your trap catch reaches or exceeds the threshold (above), you have several times to consider making your insecticide treatment. Done correctly, you only need to do it once.

Insect growth regulators (like Intrepid and Esteem) are most effective on eggs and very young larvae, so they would be targeted at late tight cluster (‘pre-pink) or pink stage. Actara is targeted at this period; the label reminds us that it penetrates the foliage a bit. Organic growers don't usually have leafminer problems, but if they do, Aza-direct is OMRI listed, and would be used then.

Vydate is rough on beneficials, but effective on leafminers. The preferred timing would be at pink, because spraying this material soon after pink can cause erratic fruit thinning.

Materials that are effective on the young larvae (“sap-feeders”) come next. For some, that's right at or right after petal fall. Proclaim is one example. You use it with a surfactant, and it has some translaminar (foliage

penetrating) action. The voliam flexi and Actara labels have similar language --- apply right after petal fall. Other labels say just during the sap-feeding stage, so that could be a little after petal fall (watch for signs). Agri-Mek, Altacor, Assail, Belt, Calypso, Delegate, Lannate, Leverage, Provado, Sherpa and SpinTor are in this category. Agri-Mek, Delegate and SpinTor are among treatments that require a surfactant or horticultural oil added to the tank to be effective, so check the labels!

We have a number of pyrethroid insecticides that also work on leafminers. I believe they affect adults (or eggs, if you have high enough gallonage to hit them), not the immatures, which are inside the leaf layers. Pyrethroids (in general) are quite persistent and broad spectrum, so they can be very harmful to beneficial insects. I usually downplay them as an option for leafminers. Examples include Asana, Baythroid, Delegate, Pounce, Proaxis, Warrior.

Avaunt is registered to "suppress" leafminers, which to me means it doesn't work too well. If you apply an insecticide this generation for leafminers, you should need only one treatment.

If you treat (correctly) for the first generation, it would be rare to require a leafminer treatment later in the season.

Heads Up! New Fruit Fly in US, Attacks Small Fruit

The way we ship goods back & forth, it isn't a surprise that new insect pests keep appearing in the USA. Nourse Farms has alerted its strawberry plant customers about a new species of fruit fly that threatens strawberries and other fruit. It hasn't appeared in NH yet (as far as we know), but apparently is in California, Florida, Oregon, and Hawaii already.

This species, the spotted wing drosophila *Drosophila suzukii* (Matsumura) attacks healthy, ripe fruit, in addition to overripe, rotting fruit. Unlike other drosophilids, it has a serrated egg layer, allowing it to insert an egg into a ripe fruit. Cherry, bramble fruit, and strawberry are among the hosts reported. If this appeared here, we would have to shift management to HEAVILY emphasize sanitation. Anyway, don't be too alarmed yet. The species is from Japan, China and elsewhere.

Drosophilids are really tiny flies, and this one is about 2mm long (1/12th of an inch). Some people call them vinegar gnats. They're light brown, and strongly attracted to odors of ripe or rotting fruit. One species, *Drosophila melanogaster*, has been used for years as a subject of genetic research.

Too Late for Lime Sulfur on Bramble Fruit

Lime sulfur is a very effective treatment to burn up spores of pathogens on the surface of the plants. It can be helpful for anthracnose, spur blight, and cane blight. Please remember that it should not be applied after the fruit buds are ½ inch long, or you can get significant burning to this year's growth.

Mummyberry on Blueberry

Buds stages advanced so quickly this year that some growers missed their opportunity to apply urea to burn back the fungal cups of mummyberry fungus. Those tiny mushrooms are the source of the spores that start this year's infections. Becky Sideman and I wrote a LOT on mummyberry in my #3 newsletter from 2009 (http://extension.unh.edu/Agric/Docs/April21_2009.pdf) . You can see photos and read more details there, especially the cultural methods.

For those growers using fungicides, a key is protecting the new growth from primary infections, which occur during rainy periods from bud break through bloom. Indar is very effective, but be sure not to make more than two applications before switching to a fungicide in a different activity group. This is to prevent development of resistance. Indar is in fungicide group 3. Pristine (fungicide action group 11 & 7), Switch (9 & 12), and Captevate (17 &M4) are other choices. [Those that have two numbers are combination products containing two fungicides.] Bravo (group 5) is a fungicide that works better to prevent primary infection than it does to prevent secondary infection. Serenade is a biopesticide approved for organic growers. It can help, but like the other materials, shouldn't be thought of as a substitute for good cultural controls.

Secondary infections start with spores produced in the primary lesions, on tender new growth. The spores splash and land on fruit, initiating infection there. The fruit don't show signs of infection right away. It becomes visible later. If we have a relatively dry spring, it might be a relatively easy mummyberry year.

More on Spirotetramat

At the March 25 NH Fruit Grower meeting, I mentioned that I was awaiting information on whether or not existing stocks of Spirotetramat (Movento, Konotos) could be used. I received a copy of EPA's letter to Bayer, and it assures us that if you have existing stock of these new insecticides, you can use it (following label instructions, of course). The company is not allowed to sell more. We'll see what happens next, and if the product is re-registered. For now, that's the news.

X-Disease in Sweet Cherries

Now that we are growing sweet cherries, there are a couple of new twists in managing them, that are different from tart cherries or other stone fruit. Sweet cherries are susceptible to X-disease, just like peaches and nectarines. But unlike them, infected sweet cherries build up high levels of the pathogen in their tissues, so they serve as a source of infection, spreading it to other sweet cherries, nectarines or peaches in the orchard. Birds like to eat sweet cherries, and they often carry fruit to fence rows or trees at the edge of your orchard, where the seeds sprout. Just like choke cherries, this represents a risk to your stone fruit. So it is wise to try to eliminate them. X-disease is fatal, and we have no way to combat it, except prevention, and eliminating infected trees.

One trick to identify sweet cherries in the orchard border is to look when your sweet cherries are in bloom. The young volunteer sweet cherries will be in bloom then as well, making them easy to spot (and then remove).

The second thing that's different is to recognize when any sweet cherry trees in your block become infected with X-disease. The symptoms in sweet cherry are quite different from peach. One of those symptoms is the leaf stipules develop very unusual shape in (at least some varieties of) sweet cherry. The stipules expand greatly, and look like extra leaves sprouting from either side of the leaf stems. This is easy to see during bloom. [Stipules are tiny appendages, one on each side of the leaf, at the point where it attaches to a twig. Look closely at cherry leaves, and you'll see them.]

Infected sweet cherries also have fruit that are paler red than others. This can start on just one or two branches on a tree.

Upcoming Meetings

April 15, 2010. **Grape Grower Twilight Meeting**. Zorvino Winery, Sandown, NH. 3:30 - 6 pm. For more information contact Nada Haddad at 679-5616 or nada.haddad@unh.edu.

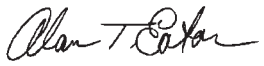
April 21, 2010. **Commercial tree fruit grower meeting and sprayer calibration demonstration.** Mack's Apples, Londonderry. The afternoon demonstration from (1 - 4 pm) features equipment to measure the pattern of airblast sprayer deposition. At the same location, an evening commercial tree fruit grower meeting begins at 5:30. Extension staff from UNH and U Mass will be on hand. For more information contact George Hamilton at 641-6060 or george.hamilton@unh.edu.

April 22, 2010. **Home Fruit Production meeting.** Merrimack County Cooperative Extension, 315 Daniel Webster Hwy, Boscawen. 6:30 - 8:30 pm. Presentation by Bill Lord.

April 24, 2010. **Attract Native Pollinators Workshop**. Coos County Cooperative Extension Office, Rt 3 (North), Lancaster 12:30 - 3 pm. Pre-registration is required, please call 788-4651.

April 27, 2010. **Integrated Pest Management Monitoring Options for Vegetable Crop Dealing with Corn Earworm, Fall Armyworm & European corn Borer.** Hillsborough County Cooperative Extension, Goffstown, NH. 6:00 - 9:00 pm. For more information contact George Hamilton at 641-6060 or george.hamilton@unh.edu.

May 7, 2010. **Wine Grape Pruning Demonstration & Grape Disease Management Discussion.** Podere San Lorenzo, 334 Emery Road, East Andover, NH. 5:30 - 7:30 pm. For more information contact Amy Ouellette at 796-2151 or amy.ouellette@unh.edu.



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