



## NH Integrated Pest Management Newsletter

April 7, 2009

Volume V

No. 2

### Fruit Bud Stages in Apples

Each year I report on fruit bud development in Durham. Some spraying, scouting for damage, or setting traps is driven bud development stage. If you're new at this, you'll have to know what they mean. In apples, vegetative buds are small (produce only leaves), and the fruit buds are quite large. Each fruit bud will produce a cluster of flowers. When the flower buds are **Dormant**, they show no obvious change from their overwintered state. My photo today is of a Macoun bud that looks pretty much dormant to me.

Next comes **Silver tip**, when the buds have swollen a bit, and scales at the tip have obviously separated, exposing the silvery tip. At **Green tip** the buds have swollen still more, and some light green tissue peeks out at the tip. At **Quarter inch green**, about ¼ inch of new growth shows. At **Half-inch green**, about ½ inch of new growth is visible. One leaf has opened into a position where the blade is about at right angles to the stem. Next comes **Tight Cluster**. That is when the cluster of individual flower buds is exposed. They're in a tight group, with short stems. To me, it looks a bit like a head of broccoli. At **Pink**, the individual flower buds have pink petals showing. None have opened yet, but the stems are fully extended. At **Bloom**, the flowers are open.

**Petal Fall:** 75 to 90% of the petals have fallen. **Fruit Set:** The fruit that have been pollinated have stems that are thicker, greenish now. Those that didn't get pollinated have thin, yellowish stems and are about to drop. If I can keep up, I'll include a bud stage photo every issue through fruit set. By the way, last spring's issue #2 describes bud stages for other fruit trees. They're slightly different.



In Durham, Fruit bud stages were as follows on Thursday April 2: Pioneer McIntosh apple: dormant. Peaches: dormant. European plums: dormant. Japanese plums: dormant. Pears: dormant. Blueberries: slight swelling on some buds.

### Orchard Sprayer Calibration Meeting

We are still working out final details, but George Hamilton and I, in collaboration with the NH Fruit Growers Association, wrote & submitted a grant proposal to NH Department of Agriculture, Markets & Food to bring Andrew Landers from Cornell University. If the funding comes through, he will offer a calibration session on April 16th, 9 AM to 3 PM, at the UNH Kingman Farm in Madbury. This is a workshop for NH tree fruit growers. There is limited seating, so **you must register in advance** to get in. We will probably limit it to one per-

son per farm. Dr. Landers will spend most of the time on airblast equipment, but he'll include some training on orchard herbicide spraying in the afternoon. If you'd like to attend, contact, Suzanne Hebert, at 862-3200. NHDAMF has awarded 5 PAT recertification credits for the meeting. **We have limited seating.**

## Tarnished Plant Bug Traps & Thresholds

In the last issue, I covered how and when to hang TPB traps in apples. This week, I have a photo of TPB stuck on a trap, to help you recognize them. Two TPB's are stuck on a trap, close to the metal eyelet. They have a shape somewhat like a stinkbug, are dark brown, and have longish antennae. Body length is about 3/16 inch (5 mm). If you check your traps weekly, the bugs are fresh enough for you to identify easily. Try longer intervals, and identification gets difficult, because the trapped insects get blackened.



I'll also cover thresholds: The number of captured TPB's that makes it worthwhile to apply an insecticide. Thresholds for TPB are a bit complicated. There are two options for decision times, and two general targets for fruit quality. Those four conditions create four thresholds. These have not changed in recent years.

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. 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.

TPB numbers vary greatly from block to block. They are usually high in blocks with large acreage of alfalfa or fallow fields nearby. Those are good places to produce lots of TPB's. I'd expect lower numbers in blocks that are surrounded by woods. Warm weather really increases TPB activity.

If numbers cross the threshold, it is worthwhile to treat. There are quite a few choices for insecticides --- too many for me to cover here. The 2009 New England Tree Fruit Management Guide has that information. By the way, I don't see a reason for backyard growers to monitor or spray for TPB.

## Black Knot on Peach & Plum



This doesn't seem to be too severe in commercial orchards, but in backyard settings, black knot can be severe. I suspect this is from lack of attention to management. Some plums are especially susceptible. Pruning out and burning black knot cankers is of key importance to preventing infections this year. The source of the fungal spores that causes the disease is the cankers. If you can eliminate them, the disease won't be a problem. Pruning time is good for that, especially if buds haven't started swelling for the season. Yes, wild *Prunus* trees (cherry, plum etc) can be sources, so don't ignore knots on wild trees nearby. Fungicides can protect from black knot if you've already

pruned out the cankers. The most important period for fungicides is white bud through shuck split stage. If you haven't pruned out the cankers, spraying is relatively ineffective.

## Two New Insecticides for Fruit

Kathleen Leahy (Polaris Orchard Management) clued me in to two pesticides that are new to me. Both were registered in NH last year, so I assume they'll be registered this year as well (2009 registrations don't seem to be posted yet on the NPIRS site).

One is Altacor, an insecticide from DuPont. The active ingredient is rynaxypyr (MOA 28). This is probably a new group to you. Ryania was a botanical insecticide that worked fairly well on codling moth and some other caterpillars. It wasn't too commonly used. The active ingredient was ryanodine. This MOA group is for chemicals that modulate ryanodine receptors in insect cells. I think (?) these are on insect nerves. It was interesting to note that the label says it is not for use on home plantings. I wonder if more labels will come out with that wording. Judging from the label, it appears to be relatively safe to beneficial insects & mites. (I have seen no data.) Grapes, stone fruit and pome fruit are on the label (also potato). Caterpillars seem to be the major targets (yes, spotted tentiform leafminer and apple blotch leafminer are caterpillars), and some other insects are "suppressed".

Voliam flexi is a new insecticide from Syngenta. It is a combination product, with a neonicotinoid (thiamethoxam) plus a new chemical called chlorantraniliprole (another ryanodine receptor modulator). This product is highly toxic to bees. It also has the same wording about not being allowed for home plantings. The mode of action group (MOA) is 4a & 28. It is registered on grapes, pome fruit, stone fruit and potato. The list of target species is fairly broad, something you'd expect from a combination product. You can view the labels of both of these products at the CDMS website <http://www.cdms.net>

## Bill's Blog

"Semi-retired" UNHCE fruit specialist Bill Lord is a blogger now. You can see his writing and pictures by following this link. <http://nhfruitgrowers.org/blog/>. There are quite a few entries on the system, dating back to January. In the latest one, he talks about fruit bud survival, vole injury to peaches and other orchard trees, crimson crisp apple, hawks, and other things. Both backyard and commercial growers will appreciate what he has to say. I'm guessing that trout and salmon will get mentioned sooner or later. Check it out. I think you'll like it.

## Peach Leaf Curl

I put this reminder in the fruit pest update telephone and my newsletter every year, but some growers don't start checking on this until it is too late. Peach leaf curl is a fungal disease that causes foliage to be discolored, distorted, and very thick & wrinkled. There are two times of the year when you can apply a fungicide to control it. One was last fall. The other time is before the buds swell in the spring. Sprays applied before leaves appear, but after buds swell, can have some effectiveness. Fungicide options include Bravo, COCS, other copper formulations, Echo, Ferbam, Kocide, Thiram, and Ziram. If you didn't have it last year, you won't need to treat for it. **This photo was taken by Mary Ann Hansen, Virginia Polytechnic Institute & State University, accessed through [bugwood.org](http://bugwood.org)**



## Apple Scab

Experienced growers should know this, but backyard growers might find this new. The fungus that causes apple scab overwinters in last year's dead, infected apple leaves. The fungus produces ascospores that are released during daytime rains. Those that land on unprotected apple tissue (fruit or foliage) can start new lesions there, if conditions are right. The disease has many generations each season. Each lesion produces spores which cause new infections, which grow more spores...

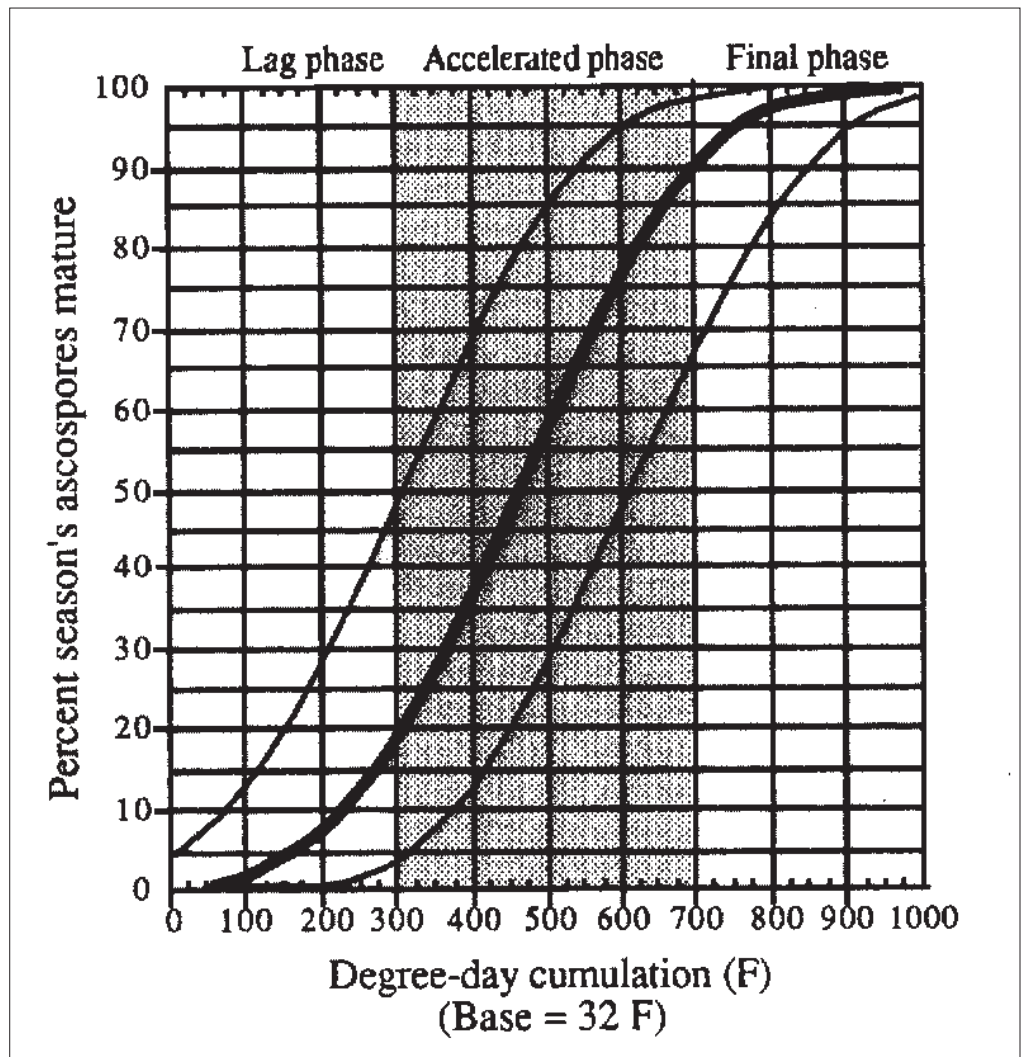
The fungus is so well tuned to its host that the first few ascospores are ready for release when the first green tissue becomes exposed. The risk at any one time depends on:

- 1) how much susceptible tissue (fruit, leaves) is exposed.
- 2) temperature and how many hours the leaves stay wet.
- 3) time of season/ascospore development.
- 4) amount of inoculum (spores that initiate infection) that is in your orchard.

Number 1 you can roughly determine by looking at the phenological stage, and the length of time since you last applied a fungicide. Number 2 can be monitored by a maximum/minimum thermometer in your orchard, plus a leaf wetness monitor. There are also revised Mills tables on page 71 of the 2009 New England Tree Fruit Management Guide. Number 3

was worked out by Bill MacHardy and David Gadoury, and is expressed in today's graph. It shows the percentage of apple scab spores that mature, based on degree days. The starting point ("Biofix") is when 50% of McIntosh buds are at silver tip stage. For us in Durham, that is usually about April 2 -10. Number 4 can be estimated with information on pgs 67-71 of the guide.

For backyard growers, I'll simplify things a bit: If you carefully controlled apple scab last year, and there are no apple leaves on the ground (from unmanaged trees) within 100 yards, you may have relatively low inoculum pressure. If not, you should assume that there are plenty of spores to infect leaves & fruit this year. Although there is some threat from apple scab disease as early as green tip stage, for most of you, the first fungicide application can wait until half inch green, possibly later. The highest number of spores for primary scab season is usually released starting around pink, bloom and petal fall stages. If you apply a fungicide correctly, and have protection for all daytime rains through the end of primary season (usually about June 5-10 in Durham), you should get through with few or no lesions. For the rest of the summer, fungicide protection is less critical,



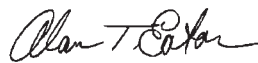
if you have few lesions develop from primary season. Typically, a good protectant fungicide gives 7 days of protection, no matter how much rain falls. There are plenty of fungicides, but captan is one of the best backyard choices, in my opinion.

One option to manage this is to grow varieties that are scab resistant. That way you don't have to apply fungicides for scab. One new one is Crimson Crisp. Catalogs can give you listings of others. Raking up and burning last year's infected apple leaves can significantly reduce the pressure from this disease, as can finely chopping up the leaves, especially if done right after they fall. When I had an apple tree, I did this with a lawn mower in fall and again in early spring.

## **Pear Psylla**

The P in Psylla is psilent. Does anyone still grow pears here? If so, psylla adults are ready. This species overwinters as adults, and they are active on warmer, sunny days. They lay spindle-shaped yellow eggs on the twigs. As I write this it is cool & drizzly, but they'll be out there in southern NH when the sun returns. Oil applied during bud swell, on a sunny, mild day can significantly help with this insect if few eggs have been laid when it is applied. Why? It delays egg laying by the females.

Your two major weapons in dealing with pear psylla are not insecticides! Proper pruning (eliminating suckers and thick flush growth) is important. Avoid over fertilizing with nitrogen. It encourages suckers and other succulent growth that psyllas require.



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