



NH Integrated Pest Management Newsletter

May 18, 2005

Volume XI

No. 4

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Bud Stages This Week

Bud stages at the Woodman Horticulture Farm in Durham were as follows on Monday, May 16: Pioneer McIntosh Apple: bloom. Red Haven Peach: dead fruit buds. (A few White Lady buds survived, and are in bloom now.) Pears: bloom. Blueberries: bloom just beginning.

Apple Scab Degree Days

Here are accumulated apple scab DD since biofix, as of Monday May 16, 2005: Durham: 509. Westmoreland: 495. Milford: 564. Litchfield: 585. Nottingham: 435.

Apple Events at Bloom and Petal Fall

There are a lot of things happening in the pest world during this time. I'll start with the pathogens. Apple scab fungus is rapidly maturing spores, and releasing them during daytime rains. The rust fungi are also maturing spores, and releasing them during rainy periods. The bacterium that causes fireblight can be readily spread during bloom, if conditions are right. I'll cover that in more detail below, but basically that means warm rain during bloom.

In the insect world, green pug moth larvae are completing their development during bloom. They pupate just before petal fall. Unless you've controlled them with pesticides, larvae of winter moth, green fruitworms, eyespotted budmoth and Eastern tent caterpillar are feeding on leaves. The first two will also feed on young fruit as it forms. Apple blotch and spotted tentiform leafminers are still laying eggs on the undersides of leaves, and the first of the eggs are hatching. Eggs of mullein bug are hatching, and those of white apple leafhopper are getting ready to hatch. European apple sawflies are laying eggs. Codling moth adults are emerging and mating.

Plum curculios are probably active already, and some may be flying into orchards as early as bloom. There are other things going on, but you get the idea: its busy.

What Pollinates your Fruit?

Nearly every elementary school student has heard that honeybees pollinate. Honeybees are not native here. They require warm weather and little or no wind to be effective. But there are MANY other species of bees that help pollinate. Bumble bees are one example. They will readily work in cooler conditions than honey bee. We have at least ten species of them in New Hampshire. There are others, too: many species of bees in the families Colletidae, Hylaeinae, Andrenidae, Halictidae, Megachilidae, and Melittidae. I don't know their habits, but the message is that there can be quite a few native pollinators to help the honeybees. If you have really big blocks of apples, then these wild bees probably don't penetrate as much into the middles of the orchard.

Honeybees can really help ensure a good set of fruit because they live in very large colonies that we can move right into the orchard. Honeybee hives need to be in the sun, with the entrance facing east or southeast. They need to have protection from the wind, too. It helps to avoid placing them directly on the ground, since a wet bottom board is hard to warm up quickly in the morning.

Biofix Times for Some Apple Insects

Degree days can be helpful to plan some insect monitoring or treatment events in the orchard. We are collecting growing DD from several NH sites this year. GDD's have a base temperature of 50F. It is convenient that several apple insect DD models use the same base. Codling moth is one of them. If you are an organic grower, knowing when codling moth is active is very helpful. You can use growing degree days to estimate when codling moth risk is greatest. The starting time (biofix point) is when the first codling moths start to fly. If you don't have pheromone traps for codling moth, you could use petal fall as a fairly accurate estimate for the biofix.

The optimal timing to monitor San Jose scale (for appearance of the crawlers) can also be done with GDD's. The biofix is first male flight, which is usually at full bloom. If you wanted to be REALLY accurate, you could set up SJS pheromone traps, but they have to go up before bloom. No traps? Use the full bloom date for the biofix.

Plum curculio activity can also be predicted (somewhat accurately most years) with GDD's. The biofix point is at petal fall.

I'll have more details on these later, but if you want to use degree days to help predict these events, start recording at the biofix points listed above. I'll remind you again that Glen Koehler's "orchard radar" is on the ProNew England website, and I'll repeat the link to that from my earlier newsletter <http://pronewengland.org/Content/PROInfoDecisionModels.htm>

Plum Curculio: The Most Serious New England Apple Insect

Probably I'll get to say more about curculio in my next newsletter, but in case we get warm weather that pushes bud development, I'll mention a few things now. PC overwinters as an adult. That means it is ready to move into orchards when the right cues occur. Apparently weather (accumulated degree days, and current temperatures) is a factor. Odor is, as well. Some curculios may enter the orchard during bloom if warm temperatures start them up. But they can't do anything to attack the fruit until the fruit grow to about 6mm across or so. That is when the fruit that have set start to release volatile chemicals that serve as cues to PC.

Usually the first PC activity is shortly after petal fall, but in some years it doesn't begin until 5 or 6 days later. You need fruit of the right size, plus warm conditions to bring in a lot of them. Sometimes there is significant immigration into the orchard at night. Many of us think of temperatures in the 70's as being good to start them (PC's) up.

Over the years, I have seen three times that I remember when novice growers lost most of their crop to this insect, in a very short time. You want to be on top of this one, folks. If you want to reduce spraying by delaying your curculio treatment, PLEASE do some monitoring. Glen's orchard radar is another tool to help in deciding when to start (and end) curculio treatments.

Winter Moth in Blueberry?

I've had three questions on this, so people must be reading information that came from Massachusetts or Rhode Island, where WM problems were serious last year. Yes, it does feed on blueberry. I don't anticipate significant problems in NH blueberries this year, but if you are concerned, check for inchworms and chewed foliage. Now would be a good time. You could gently tap the twigs/branches onto a white pad of paper, and see if that makes them easier to spot. I've never seen them on blueberry, but this could be the year I do (especially with nearby outbreaks last year). You can read more on WM in issue number 2, posted about 1 month ago.

Fire Blight Time?

Luckily for us, weather conditions usually are not optimal for fire blight spread in NH. We do have some periods when risk can be high, but usually for us, conditions are moderate or low risk.

Fireblight is caused by a bacterium. Infections are most commonly spread during bloom. Active fireblight cankers secrete bacterial ooze in the spring, and it is sugary. This attracts many insects, which can aid in its spread. Rain also spreads the bacteria (by splashing). One common method of infection is for bacteria to be carried (or splashed) to the stigma, at the tip of the pistil of the flower. The bacteria grow extremely well there, and can be spread easily to nectar-secreting stomates or other natural openings. Bacteria could also hit young shoots. Once inside, the bacteria invade and multiply, causing wilting, darkening and death of the tissues. Sometimes droplets of ooze can be seen as well.

Warm rain during bloom is the most favorable conditions for fireblight spread. But there are other factors, too. One is how much inoculum is around. If your sanitation efforts have been good, you'll have few or no active cankers in your trees. That will help a great deal. But there still could be some from other hosts nearby. Anything in the rose family can be a host.

Another factor is the susceptibility of your variety. Here's some bad news: many of the hot new varieties are very susceptible, like Braeburn, Fuji, Gala, Ginger Gold, Idared (OK, that one's not "hot" in my book!), Jonagold, Mutsu, Paulared and Spigold. Susceptible varieties include Cortland, Golden Delicious, Jersey mac, Macoun, McIntosh, Northern Spy, Red Free, and Spartan. While I'm on the subject of susceptibility, I'll point out that rootstocks vary as well. M.26 and M.9 are the most susceptible, and other susceptible ones include Mark, Budagovsky 9, Ottawa 3, P.16...

If you may have a lot of inoculum, and have susceptible varieties, it would be wise to watch the weather. The New England Apple Pest Management Guide (pgs 23-4) covers the two major models that predict risk from fireblight. You could also go to Glen Koehler's Orchard Radar at the Pro New England website for current predictions around New England. Point your server to: <http://pronewengland.org/Content/PROInfoDecisionModels.htm>

For those of you who grow pears, don't feel left out! Susceptible varieties include Bartlett, Beurre d'Anjou, Beurre Bosc, Clapp's Favorite and others.

Tarnished Plant Bugs on Strawberry

I don't have anything new here since the last newsletter, except to point out that TPB activity is slow in cool weather, and high in warm, sunny weather. I hope you'll be checking your strawberries. It is worth it.

Clippa aka Strawberry Bud Weevil

Clipper hits both strawberries and bramble fruit. The overwintered adults should be starting activity about now (if we ever get sunshine again). They attack flower buds just before they open. The females lay eggs (one per bud) inside, then clip the peduncle (stem of the flower bud). The bud falls to the ground, the egg hatches, the larva feeds inside, and by mid-summer a new adult emerges. There is just one generation per year.

Edges of plantings are usually hit harder than the interiors, especially in new plantings. Research in New York proved that some varieties of strawberry can compensate for clipped primary fruit buds, by increasing the size of the remaining fruit. Jewell and Senecca are examples of varieties that compensate well. (Compensation is greatest for early damage, and less for late clipped buds.) Lateglow and Primetime show moderate

compensation. Earliglow, Cavendish, Honeyoe, and Northeaster show little or no compensation. So these two pieces of information (compensation and edge effect) modify the urgency of clipper infestation in strawberries. For some varieties it is still important to check, especially the edges. For others, it isn't worthwhile.

Clipper hits raspberries and blackberries too. Raise your hand if you knew that. Research on compensation for bud clipping hasn't been done on bramble fruit (to my knowledge). Clipper can sometimes hit brambles hard, so it is worthwhile to check just before the flowers open.

By the way, just before flowers open is the last time to treat for **raspberry fruitworm** on brambles, so keep your eyes open for that too.



Clipper and Raspberry Fruitworm Look Like This

Here are photos, so you have no excuses! Clipper is really tiny, about 1/16 inch long. You should be able to see the "snout", since it is a weevil (fear no weevil). Evidence of presence includes clipped flower buds and tiny holes in flower petals. Raspberry fruitworm is a bit larger, nearly 1/8 inch long. It is tan and oval shaped.



Grape Flea Beetle

I don't have many opportunities to cover grape insects, but cool weather that delays opening of grape buds is a situation where grape flea beetles might become a problem. The adults are shiny bluish-black, about 1/8 inch long. The adults chew the opening buds and early vegetation. Sometimes there are enough to create a problem. We've been experiencing cool weather recently, so you might want to check, if you grow grapes.

Rose Chafers Soon

Rose chafers seem to like foliage of grape and bramble fruit. Some spots have serious defoliation problems, and others have very few if any. The adults should appear in about 2 weeks or so. Here's what they look like.



Alan T. Eaton
Extension Specialist
Integrated Pest Management