



Vermont Apple IPM News

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Stage of Development: *Bloom at UVM HRC*

Quick Review of Arthropod IPM at Petal Fall -

The following is a good review of some options for insect and mite management at Petal Fall written by Art Agnello, Cornell University, which appeared in the May 16, 2005 issue of SCAFFOLDS Fruit Journal:

Plum Curculio

“Adults move into orchards from overwintering sites in hedgerows or the edges of woods and adults are active when temperatures exceed 60F. Adult females oviposit in fruit during both day and night but feed mostly at night. Depending on temperature, overwintering adults remain active for two to six weeks after petal fall. Because adults are not highly mobile, orchards near overwintering sites, woodlands, and hedgerows are most susceptible to attack. Fruit damage is usually most common in border rows next to sites where adults overwinter. Although initial post-bloom sprays for plum curculio control should begin at petal fall, growers are often unsure how many additional sprays will be necessary to maintain protective chemical residues to prevent subsequent damage throughout the PC oviposition cycle, which varies according to temperatures and weather patterns after petal fall.

Following from the fact that PC activity and oviposition are greatly affected by temperature, an oviposition model has been developed to determine when control sprays after petal fall are no longer necessary to protect fruit from PC damage. This model is based on the assumption that residues from control sprays after petal fall only need to be maintained on fruit and foliage until PC adults stop immigrating into orchards, which corresponds with when about 40% of the oviposition cycle is complete. This is predicted by the model to occur at 308 DD (base 50F) after petal fall. [NOTE: This number used to be advertised as 340 DD, but that figure was the result of an incorrect metric conversion that had gone undetected until just this year.] Probably, this strategy works because, after 40% of PC oviposition is complete, adults usually are not moving into the orchard from outside sources, or moving around within orchards from tree to tree. Therefore, by this time, adults residing in treated trees have already been killed by insecticide residues and are unable to complete the remainder of their normal oviposition cycle.

In order to use this strategy: (1) Treat the entire orchard at petal fall with a broad spectrum insecticide. (2) Start calculating the accumulation of DD after petal fall (base 50F). (3) No additional sprays are necessary whenever the date of accumulation of 308 DD falls within 10-14 days after a previous spray. In cherries and other stone fruits that are already at shuck fall, sprays should start at the first opportunity (i.e., like last week).

European Apple Sawfly

This primitive bee and wasp relative shows a preference for early or long-blooming varieties with a heavy set of fruit. This insect is generally a pest mainly in eastern N.Y., although it has been slowly making its presence known in the more western sites, progressing even as far as Wayne Co. The adult sawfly emerges about the time apple trees come into bloom and lays eggs in the apple blossoms. Young larvae begin feeding just below the skin of the fruits, creating a spiral path usually around the calyx end. This early larval feeding will persist as a scar that is very visible at harvest. Following this feeding, the larva usually begins tunneling toward the seed cavity of the fruit or an adjacent fruit, which usually causes it to abort. As the larva feeds internally, it enlarges its exit hole, which is made highly conspicuous by a mass of wet, reddish-brown frass. The frass may drip onto adjacent fruits and leaves, giving them an unsightly appearance. The secondary feeding activity of a single sawfly larva can injure all the fruit in a cluster, causing stress on that fruit to abort during the traditional "June drop" period.

Certain insecticides that control these pests also adversely affect bees, which can pose a problem at petal fall because certain apple varieties lose their petals before others. In blocks of trees where petal fall has occurred on one variety but not the others, the variety that has lost its petals is likely to sustain some curculio or sawfly injury until the insecticide is applied. Two recently registered insecticides with activity against both plum curculio and sawfly, Avaunt and Actara, may have a slight advantage in this case. Although highly toxic to bees exposed to direct treatment, they are relatively non-toxic when dried. A more recently registered product, Assail, gives yet another option for controlling sawfly (it's not very active against plum curculio, but will do a good job against rosy apple aphid, tarnished plant bug, and spotted tentiform leafminer, as well as sawfly, at this timing). As mentioned in previous articles this spring, Assail can be applied during bloom, which may give it the chance to persist into the period when newly set fruitlets are first susceptible to injury. To minimize the hazard to honey bees, apply any pesticide only when no bees are actively foraging on blooming weeds (evening is better than early morning).

Mites

If you elected and were able to get an oil or miticide applied during our very brief prebloom mite control window, you're in good shape. If not, and you are concerned about early buildup in certain problem blocks, Apollo, Savey and Zeal are just as appropriate to consider at petal fall as is Agri-Mek, which is one of the normally recommended materials at this time. Because of the (at times) cool temperatures up to this point, nymphal populations are likely to be small enough to be effectively handled by any one of these materials, if they fit into your product rotation schedule (i.e., they weren't used last year).

Obliquebanded Leafroller

Because these insects overwintered as 1st or 2nd stage larvae, they probably haven't had enough warm weather to encourage them to feed and grow as much by now as they have in recent years, and may be somewhat smaller than they usually are by petal fall. This translates into potentially higher control efficacy with whatever product is used against them, as smaller larvae are generally easier to kill. Scout the blossom clusters for larvae feeding within both the flowers and rolled leaves; a 3% infestation rate could justify a petal fall treatment to minimize overwintered fruit damage and help reduce summer populations. Among the selective insecticides available, Intrepid is the recently registered replacement for Confirm, and B.t. products, which can be used while blossoms are still present, include Dipel, Deliver, Agree and Javelin. Pyrethroids such as Asana, Danitol, or Warrior can also be effective, depending on past use history, but be aware of their broad-spectrum effects, which can work both for and against you, according to how many beneficial mites and insects you can afford to lose. ...

White Apple Leafhopper

We haven't spotted any yet, but WALH nymphs can be numerous in some blocks at petal fall, especially in the eastern part of the state. Nymphal populations of 1 or more per leaf can result in stippling damage to the leaves. Besides Provado, Actara, Avaunt and Assail have proven to be effective against this pest, and a petal fall application of any of these materials also gives leafminer control. Rosy apple aphids can similarly be cleaned up with this strategy (for all of the above except Avaunt), although petal fall is often too late to prevent fruit damage that their feeding may have caused. Growers using Sevin in their thinning sprays will get some WALH control at the 1 lb rate. Alternative choices include Thionex and Lannate; Agri-Mek or Carzol used for mites now will also do the job, but Carzol will be harmful to predator mites. The damage potential of this first generation should be evaluated carefully before deciding on the need for a specific control of this pest."

Insect Activity In Vermont—

Last week we received blossom samples from an orchard that had **Green Fruitworm** larvae, **Green Pug Moth** larvae, and what appeared to be **Oblique Banded Leafroller** larvae. Also, we received blossom samples which had damage from **Tarnished Plant Bug**. This damage appeared as a hole on the side of the developing fruitlet where the insect had pierced the tissue with its mouthparts. When cut open, the developing fruitlet was brown and dying. Early feeding by TPB causes buds to abscise. We also saw this damage at the UVM HRC.

Also, this past week **European Apple Sawfly** activity increased significantly at the UVM HRC to the point where we are already over threshold for this insect.

2005 Degree-Day Accumulation in Vermont

2005 <u>Estimated</u> Degree-Day Accumulation (Base 50F, from Jan. 1) for Selected Vermont Sites ¹				
Date	So.Burlington	Shoreham	South Hero	Dummerston
5/16	138	158	134	171

¹Degree Days received from Skybit E-Weather Service: <http://www.skybit.com/>

Arthropod Activity to “Expect” based on Degree-Days:

Arthropod ‘Events’ Based on Degree-Day Accumulation ¹	
Pest/Phenology Event	Estimated DD Base 50 F for Event (from Jan 1)
European Red Mite (ERM) - egg hatch observed	100-168
STLM - 1st generation adult peak flight	112-210
San Jose Scale (SJS) - 1st adult catch	184-322
CM - 1st adult catch	188-324
STLM -1st sap-feeding mines observed	165-317

¹ Source of Estimated DD (Base 50F) for arthropod pest events: Pest Management Guidelines for Commercial Tree-Fruit Production 2005. A Cornell Cooperative Extension Publication, Table 14: "Degree-day accumulations (from January 1) corresponding to selected fruit phenology and arthropod pest events."

A Reminder— Codling Moth Traps

It is time to place Codling Moth pheromone traps in the orchard. If CM has been a problem in your orchard, optimum spray timing can be estimated by setting up pheromone traps during bloom to detect the beginning of adult emergence which then can be used as a biofix (starting point) for accumulating degree days to track egg development and egg hatch. Use at least 2 traps in blocks and check at least twice a week for first trap captures. Hang traps as high as practical (6-8 ft) in the outer canopy and at least 30 feet away from other pheromone traps. Give preference to the southeast side of the canopy. Make sure the trap entrance is clear of foliage.

Contact Information

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