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# *Fruit Notes*

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**Cornell Cooperative Extension**  
Lake Ontario Fruit Program

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## **Petal Fall Pest Management Review**

Dr. Art Agnello and Dr. Monique Rivera (Cornell AgriTech), Janet van Zoeren (CCE-LOF) and Mike Basedow (CCE-ENYCHP)

As we move into bloom this week, now is a good time to think ahead and make sure we're ready for the critical petal fall insect management period. Keep reading for some reminders about the key insects to keep in mind this spring.

### **Plum Curculio**

Adults are active when temperatures exceed 60°F, and begin to move into orchards from overwintering sites in hedgerows or the edges of woods. Adult females oviposit in fruit during both day and night, but feed mostly at night. Depending on temperature, overwintering adults remain active for 2–6 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. A fact sheet with photos and descriptions of this insect's life stages can be found at:

<https://hdl.handle.net/1813/43118>.

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 largely determined by temperature, we are able to use an oviposition model to estimate 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 sprays applied after petal fall need to be maintained on fruit and foliage only until PC adults stop immigrating into orchards. The model predicts this to occur at 308 DD (base 50°F) after petal fall of McIntosh. This strategy works because, after 40% of PC oviposition is complete, adults usually do not move into the orchard from outside sources, or 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.

Understanding an orchard's historical damage is important for the management of plum curculio. If there has been significant damage in the previous years, it is helpful to pinpoint the hotspots of damage within the orchard and to place pyramid traps at the end of where hotspots occur. This can help early detection and confirmation of their movement into the orchard.



### PC best management summary:

(1) Treat the entire orchard at petal fall with an effective insecticide (see below).

(2) Start calculating the accumulation of DD after petal fall of Macs (base 50°F); this is easily done from the NEWA Apple Insect Models page (<https://newa.cornell.edu/crop-and-pest-management>) by entering the petal fall date for your area.

(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** sprays should start at shuck fall (or should have already started, for any varieties that are already there).

Recall that, in addition to the industry standard broad-spectrum materials such as **Imidan**, some additional options may be considered: **Avaunt** and **Actara** are effective for plum curculio in apples and pears, and **Avaunt** is also labeled in stone fruit. Another option would be **Exirel or Verdepryn**, diamides with strong efficacy against this pest. Delegate, Assail, and Altacor all have some activity on PC, but should not be considered as the first choices in high-pressure blocks.



Pyramid traps can be used to monitor PC migration into known hotspots within the orchard. Image courtesy AgBio.

### European Apple Sawfly

This primitive bee and wasp relative prefers early or long-blooming varieties with a heavy set of fruit. While it has historically been more of an issue for eastern New York, it has been gradually becoming more problematic across our region. The adult sawfly emerges around 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, and which some have described as decorative looking, although fruit marketability is obviously affected. 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 that fruit to abort during the "June drop" period. A fact sheet with photos and descriptions of this insect's life stages can be found at:

<https://hdl.handle.net/1813/43091>



European apple sawfly damage is characterized by its russeted, spiraled scars. Image courtesy OMAFRA.

Certain insecticides that control this pest 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 an insecticide is applied.

**Avaunt, Actara and Imidan** are all effective against both Plum Curculio and Sawfly. **Assail** represents another option for controlling sawfly; it's not very active against plum curculio, but will do a good job against rosy apple aphid (and spotted tentiform leafminer, if those still can be found in your orchard). **Altacor and Exirel** are both rated high in their control efficacy against sawfly. To minimize the hazard to honeybees, make sure any pesticide is applied only when no bees are actively foraging on blooming weeds (evening is better than early morning).

### Obliquebanded Leafroller (OBLR)

As you're looking through your buds this time of year, it would be prudent to have a quick look for later-stage larvae in problem blocks to determine whether a treatment against the overwintered OBLR brood should be included in your petal fall plans. **Scout the blossom clusters or foliar terminals for larvae** feeding within both the flowers and rolled leaves; a 3% infestation rate could justify an application to minimize overwintered fruit damage and help reduce summer populations (there's a sequential sampling chart to facilitate this process on p. 73 of the 2022 Guidelines). A fact sheet with photos and descriptions of this insect's life stages can be found at: <https://hdl.handle.net/1813/43111>.



Damage caused by overwintering OBLR larvae around the petal fall timing. Image courtesy NYSIPM.

Among the selective insecticides available, **Intrepid and Rimon** have been successful at this timing, and **B.t. products**, which are specific to control only moth caterpillars, can be used while blossoms are still present (i.e., Agree, Biobit, Deliver, Dipel, and Javelin). Additionally, **Proclaim** has been shown to be very effective at the petal fall timing, and also provides activity against early season mite populations. **Delegate, Altacor, Exirel, and Verdepryn** all offer very good efficacy against OBLR as well as the internal leps such as Codling Moth and Oriental Fruit Moth. **Grandevo** is a newer biological that is also effective against this broad group of leps. Pyrethroids such as Asana, Baythroid, Danitol, Warrior II, Proaxis or Leverage may 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 your approach towards conserving beneficial mites and insects. **Mating disruption** is an option for larger, continuous (10+ acres) blocks. If interested, a newer to market option is to combine mating disruption for OBLR and OFM. While it may take a couple of years to be able to depend solely on mating disruption, in the long run it could provide very good control.



## Oriental Fruit Moth (OFM)

Use the NEWA Apple Insect Models page to chart current degree day (base 45°F) progress towards the recommended spray timing (170 DD in peaches; 350 DD in apples). To maximize the efficacy of 1st brood control, **peach growers** should use one of the suggested options from the Guidelines starting at petal fall, backed up 10–14 days later. **In apples**, in addition to Delegate, Altacor, Exirel, and Verdepryn, many insecticides will do an acceptable job of controlling this generation, including Imidan, the pyrethroids, Intrepid, Assail, and Avaunt. A fact sheet with photos and descriptions of this insect's life stages can be found at: <https://hdl.handle.net/1813/43112>.

## European Red Mite

In general, pre-bloom conditions this year made it difficult to get in an applications of oil or even mite ovicides. If you were unable to get those application made, it is definitely a good idea at petal fall to have a look at your rapidly expanding terminal shoots for evidence of hungry motile mites, and consider an early "summer" application of a suitable material to head off problems before they get out ahead of you. Use the 2.5mites/leaf threshold (p. 75 in the Guidelines). There are numerous choices of products available at this time, including the traditionally considered ovicides such as Apollo, Savey and Onager (if not already used this season), as well as Agri-Mek, which can still easily get into the tender leaf tissue to do its work, plus a host of moderate- and quicker-acting maintenance/rescue materials such as Zeal, Kanemite, Nexter, Portal, Acramite, Envidor, Nealta, and Banter. Additionally, if you're planning to apply Proclaim for OBLR, you'll get some miticidal activity too. Be aware of seasonal use limits and IRAC rotational considerations with anything you use now. A fact sheet with photos and descriptions of this pest's life stages can be found at: <https://hdl.handle.net/1813/43092>.

## San Jose Scale

Minute SJS adult males emerge in the spring from beneath scale covers on the trees, usually following petal fall, and mate. The females produce live crawlers about 4–6 weeks after mating; these make their way to new sites and insert their mouthparts into the tree, secreting a white waxy covering that eventually darkens to black. SJS infestations on the bark contribute to an overall decline in tree vigor, growth, and productivity. Fruit feeding causes distinct red-purple spots that decrease the cosmetic appeal of the fruit. Insecticidal sprays are most effective when directed against the first generation crawlers, specifically timed for the first and peak crawler activity, which are usually 7–10 days apart.

In the Geneva area, first crawler emergence has tended to occur sometime around mid-June. To monitor, place a piece of double-sided tape on branches to track initiation of crawler movement. If a treatment against this stage is needed, **Esteem 35WP** is one option. It should be applied at 4-5 oz/acre at first crawler emergence; a low rate (0.25% or 1 qt/100) of a highly refined summer oil (see above) has been shown to improve penetration and, therefore, control. Additional products showing control efficacy include **Centaur** (except Nassau and Suffolk Counties), **Movento** (most effective when applied at PF-1C and mixed with an organosilicone or nonionic spray adjuvant), **Sivanto Prime**, and **Assail**. Other options include Imidan, Admire, or pre-mixes such as Endigo, Leverage, or Besiege. These applications should also be effective against White Prunicola Scale, which has gotten to be increasingly common of in our area, in apples as well as peaches.



Monitoring for SJS crawler emergence with double sided black tape around tree limbs. Image courtesy netreefruit.org.

## Woolly apple aphid

This pest has been creeping into more blocks in WNY over the past few years. Options include Diazinon (the best, but a problematic choice for some growers); Movento at PF-1C or whenever infestations are noted, Sefina, Assail, and Sivanto.

## Now is the Time to Start Thinking How to Promote the Formation of 'Honeycrisp' Flower Buds in 2023

Terence Robinson and Mario Miranda Sazo

Please be aware that the timing of flower initiation and differentiation of buds that will produce the next year Honeycrisp fruit happens **MUCH EARLIER** in the growing season than for most varieties (Figure 1). The work conducted by Poliana Francescato found that about 95% of the Honeycrisp spur buds collected 45 DAFB (days after full bloom) had already formed a flower for the next season. Thus, we assume that flower induction begins about now.

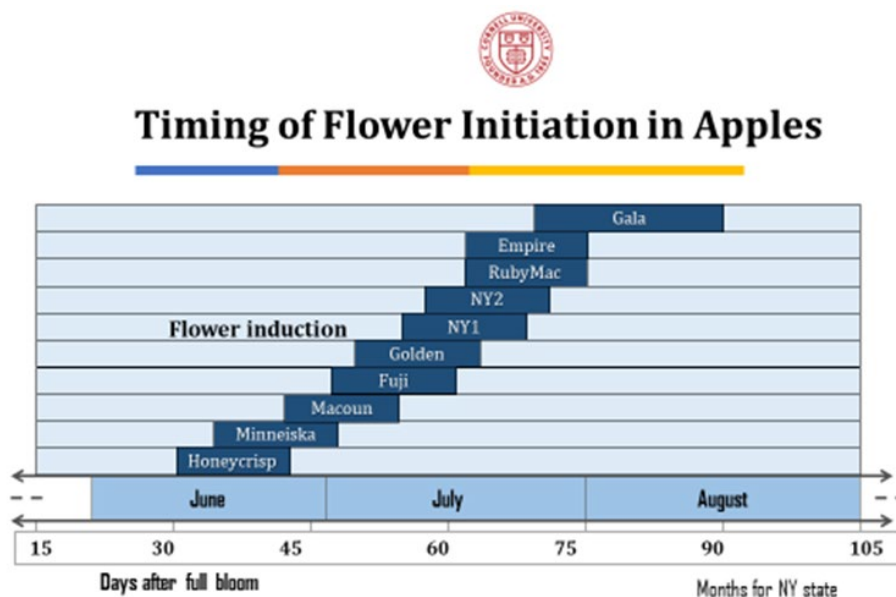


Figure 1. Timing of flower initiation for Honeycrisp occurs much earlier than the rest of the apple cultivars (peak 45-50 DAFB, end of June/early July in NY State).

**Why too many Honeycrisp seeds per tree affect return bloom:** It is well known that the gibberellins (GAs) produced by the developing seeds in apple fruitlets inhibit apple flower formation on the same spur as the fruitlet. For this reason, **EARLY THINNING**, at **bloom** and **petal fall**, to quickly reduce the total number of seed on the tree is the best and most successful approach to overcome biennial bearing and produce regular crops for Honeycrisp. The idea of using NAA as a thinner at bloom, petal fall and at 8-10mm fruit is a good choice in the case of Honeycrisp to help promoting flower formation. An even more successful strategy has been to use ATS at bloom followed by NAA + Carbaryl at petal fall and 12mm fruit diameter. When, both chemical and hand thinning is accomplished early, combined with 4 applications of summer NAA at 5-10ppm up to 60 DAFB annual flowering has been achieved in most years. This has been our standard recommendation but in some years the return bloom sprays have not worked. In the last few years, we also tested earlier Ethephon sprays instead of summer NAA sprays with even better success. We now suggest that Ethephon at ½ pint/acre be used at the 16mm fruitlet stage and then 3 additional Ethephon sprays at 1 pint/acre at weekly or 10 day intervals for the second, third, and fourth sprays. We caution growers to avoid the use of ethephon with temperatures greater than 80F to avoid thinning, especially when spraying at the 15-18mm fruitlet stage. In Figure 2 is a suggested spray program for thinning and return bloom of Honeycrisp based on ATS, NAA, and Ethrel.



## Spray program to enhance flower formation in Honeycrisp

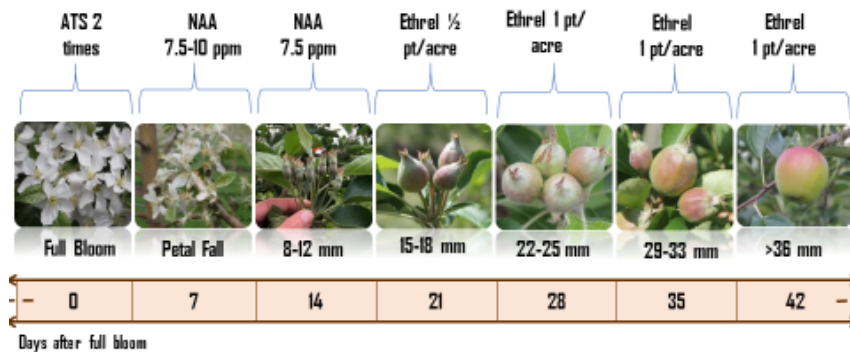


Figure 2: ATS, NAA, and Ethrel spray program to enhance flower formation in Honeycrisp.

## May is Mental Health Month

### NY FarmNet Offers Trainings to Support Mental Health Awareness + Literacy

Recognizing that May is Mental Health Month, and as part of the USDA Farm and Ranch Stress Assistance Network funding, NY FarmNet is offering two to groups of farmers and agricultural business professionals, or those who provide direct service to farmers and farm employees. NY FarmNet believes in building a common language around mental health and suicide prevention, and these trainings support that work in building literacy. Building mental health and wellness literacy helps remove barriers like stigma, embarrassment, and shame.

#### Talk Saves Lives: An Introduction to Suicide Prevention

American Foundation for Suicide Prevention standard program

This program provides participants with a clear understanding of this leading cause of death, including the most up-to-date research on suicide prevention, and what people can do in their communities to save lives. Participants will learn common risk factors and warning signs associated with suicide, and how to keep themselves and others safe.

Length of training: 45 minutes – 1 hour

Format of training: Zoom or in person

Max/min # of participants: No max /10

\*FarmNet can help advertise to bring in outside attendees if appropriate.

## Mental Health First Aid

National Council for Mental Wellbeing standard program

Just as CPR helps you assist an individual having a heart attack, Mental Health First Aid helps you assist someone experiencing a mental health or substance use-related crisis. In the Mental Health First Aid course, you learn risk factors and warning signs for mental health and addiction concerns, strategies for how to help someone in both crisis and non-crisis situations, and where to turn for help.

Length of training: 6 hours in class + 2 hours of pre-work

Format of training: Zoom or in person (preferred)

Max/min # of participants: 30 max/15 min for in person; 30 max/5 min for virtual

\*FarmNet can help advertise to bring in outside attendees if appropriate.

If you are interested in hosting Talk Saves Lives or Mental Health First Aid, contact Kate Downes, [kdownes@cornell.edu](mailto:kdownes@cornell.edu) to schedule one. Trainings will be offered through May of 2023, free of charge.

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NY FarmNet was founded by the College of Agriculture and Life Sciences at Cornell University in response to the national farm crisis in the 1980s. NY FarmNet still operates at Cornell as part of the Charles H. Dyson School of Applied Economics & Management. The Dyson School is part of both Cornell's College of Agriculture and Life Sciences and the SC Johnson College of Business. NY FarmNet is funded by the NYS Department of Agriculture & Markets, NYS Office of Mental Health, the private sector, and individual donations. If you are interested in making a donation to NY FarmNet, visit [www.nyfarmnet.org](http://www.nyfarmnet.org) and click the banner across the top.

## Mark Your Calendars

<b>Meeting Title</b>	Registration is Open for 2022 Virtual Meetups about Labor and AG-Technologies this Summer!
<b>Date</b>	Part 1 (June 2) Labor - Grower Experiences Part 2 (June 16) Labor - Specialist Panel Part 3 (June 30) Technology - Grower Experiences Part 4 (July 14) Technology - Specialist Panel
<b>Time</b>	7:00 pm – 8:30 pm
<b>Location</b>	Virtual (Zoom)
<b>Cost</b>	Free
<b>Contact for Info/Registration</b>	Please register as soon as possible here: <a href="https://bit.ly/orchardmeetups">bit.ly/orchardmeetups</a>
<b>Brief Description of Meeting</b>	CCE LOF will be conducting again a second round of nationwide virtual meetups this summer. Last year we focused on 'Honeycrisp' and had a great success with this new/more informal format. <b>We plan to cover labor and AG-technologies this time.</b> The link to the one-page flyer is here: <a href="https://rvpadmin.cce.cornell.edu/pdf/event_new/pdf96.pdf">https://rvpadmin.cce.cornell.edu/pdf/event_new/pdf96.pdf</a> with the agenda that we recently began to use to announce this nationwide effort.

**Save the Date – Tuesday, August 9<sup>th</sup>. LOF Summer Tour, Featuring Orleans County. More details to follow in the coming weeks.**

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Lake Ontario Fruit Program  
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Mark Your Calendar

Contact Us

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# Fruit Notes

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## Fruit Specialists



Craig Kahlke | 585-735-5448 | [cjk37@cornell.edu](mailto:cjk37@cornell.edu)  
Team Leader, Fruit Quality Management

**Areas of Interest:** Fruit Quality and factors that affect fruit quality before, during, and after storage,  
**Crops:** Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Cherries, Nectarines, Peaches, Pears, Plums



Mario Miranda Sazo | 315-719-1318 | [mrm67@cornell.edu](mailto:mrm67@cornell.edu)  
Cultural Practices

**Crops:** Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Asian Pears, Cherries, Currants,  
Gooseberries, Nectarines, Peaches, Pears, Plums



Janet van Zoeren | 585-797-8368 | [jev67@cornell.edu](mailto:jev67@cornell.edu)  
Integrated Pest Management (IPM)

**Areas of Interest:** IPM of tree fruit and berry pests, biological control, and pollinators.  
**Crops:** Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Asian Pears, Cherries, Currants,  
Nectarines, Peaches, Pears, Plum



Mark Wiltberger | 315-272-8530 | [mw883@cornell.edu](mailto:mw883@cornell.edu)  
Business Management

**Crops:** Apples, Cherries, Nectarines, Peaches, Pears, Plums

For more information about our program visit us at [lof.cce.cornell.edu](http://lof.cce.cornell.edu)