
# Fruit Notes

*YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE*

Cornell Cooperative Extension
Lake Ontario Fruit Program

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## Insect and Disease Update

Tessa R. Grasswitz

**Fire blight.** When the weather is dry, prune out any fire blight strikes that are found, cutting well back (~12") into healthy wood. Where such sources of inoculum are present, leaf damage resulting from wind storms or hail can result in infection if weather conditions are conducive to disease development (i.e., warm [average temperatures above 60 °F], and wet). Copper products such as Cueva can protect actively growing shoots only if applied prior to infection; keep in mind that any new tissue produced since the last application will be not be protected. Choose copper products with care: keep in mind the risk of fruit russetting and follow label directions. Antibiotics such as streptomycin should only be used after bloom when leaf tissue is damaged by hail or storms during high risk weather conditions, when it should be applied within 12–24 hours of damage occurring.

**Powdery mildew and apple scab**. Scout for signs of infection and continue to protect susceptible varieties through terminal bud set.

**Frog-eye leaf spot/Black rot**

In apples, the fungal pathogen (*Botryosphaeria obtusa*) causing these conditions can be found as limb cankers, leaf spots, and as a distinctive fruit rot; in pears, it appears principally as a fruit rot. There seems to be little varietal difference in susceptibility to black rot, although Empire and Cortland may be at slightly higher risk. The pathogen overwinters on mummified fruit and dead bark/twigs, and can invade almost any dead, woody tissue (including tissues damaged by winter cold). It may occur in mummified fruitlets left after thinning and is often found in tissues killed by fire blight—hence prompt removal of fire blight strikes is one component of management. At this time of year, the characteristic **leaf spot** is easy to see: it appears initially look as small, purple spots on the upper leaf surface that gradually enlarge, becoming more irregular/lobed in shape. The margins of the spots remain purple, while the centers show a zone of dark brown around a central area of paler brown/tan—creating the characteristic "frog eye" appearance. Heavily infected leaves become chlorotic and may eventually be shed; such defoliation can weaken trees if repeated over several seasons. Fruit infections may occur initially during bloom but may not become apparent until midsummer as the fruit begins to mature; they can also occur later in the summer during warm/wet periods. The distinctive rot occurs at the calyx end, although late-summer infections can also appear as lenticel spots. Fruit injured during harvest can also become infected, with the fruit subsequently decaying while in storage. For management, in addition to a fungicide program maintained through to harvest (options for black rot include Pristine and Luna Sensation

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[amongst others]), a good sanitation program will help reduce inoculum: remove dead wood and cankers from trees and either remove and burn prunings, or rake and chop them with a flail or rotary mower. Avoid leaving piles of prunings on the edge of the orchard as they can serve as sources of inoculum.

**Blister spot.** Growers of Mutsu/Crispin are reminded of the risk of blister spot on this variety. Young Mutsu fruitlets are most susceptible to this bacterial infection for a 4-6 week period about 2 weeks after petal fall. Where other varieties have been interplanted with Mutsu (e.g. Golden Delicious, Red Delicious and Cortland), they may be at increased risk of infection. The pathogen that causes this disease (*Pseudomonas syringae*), overwinters in infected buds and multiplies on the leaf surface during warm, humid conditions. Rain can then wash the bacteria onto the developing fruitlets, where they enter through the lenticels to cause characteristic reddish spots. On Mutsu leaves, a necrotic (dead) area may also be seen along the mid-vein before fruit lesions become apparent; affected leaves may be puckered and curled.

**Codling moth and oriental fruit moth**. Larvicides should already have been applied in blocks where trap catches indicated population levels of concern. For resistance management purposes, plan to rotate to a product with a different mode of action (different IRAC number) for control of later generations.

**Oblique-banded leafroller.** The first adults were caught in our monitoring traps last week, giving an estimated biofix of June 11/12$^{th}$ at these first sites. Peak flight usually occurs within about 1–2 weeks of the first adult trap captures (depending on temperature). At sites with a similar biofix to that given above, given the current and forecast temperatures, the start of egg hatch could occur towards the end of this week (at approx. 360 DD after biofix [base 43 °F]). Larvae from this generation feed on young growing terminals, watersprouts and developing fruit, with the tendency to feed on fruitlets increasing as the larvae mature and terminal growth starts to harden off. Feeding on shoots is usually only of concern on nursery stock or young, non-bearing trees. In blocks with a consistent history of problems with this species, it may be worth treating at the start of the predicted egg hatch period (at around 360-400 DD [base 43 °F] after biofix), with options such as Delegate, Altacor, or Proclaim (amongst others); products based on *Bacillus thuringiensis* (Bt) (such as Dipel) are an option where populations have historically been lighter. In orchards with a variable history of this pest (or where overwintering larvae were well controlled in spring), treatment decisions for this generation can be based on scouting growing terminals for larvae at about 600-650 DD after biofix (see p. 72 in the Cornell Tree Fruit Guidelines for a suggested sampling protocol).

**San Jose scale** crawlers (first instar nymphs) should be starting to emerge shortly. In blocks with a history of this pest, consider monitoring for nymphs to better time any spray applications: this can be done by applying a short band of black electrical tape sticky-side out: the minute, yellowish nymphs will be caught on the glue and are easier to see against the black background. Options for crawler control at this time include Centaur WDG and Assail (amongst others). Good coverage is essential, particularly on older, larger trees with dense canopies; some products benefit from the addition of an adjuvant: see individual product labels for details.

**Pear psylla.** Keep in mind various cultural practices that help reduce psylla populations and contribute to management, such as minimizing the use of nitrogenous fertilizer (to help prevent excessive lush terminal growth) and removing water sprouts in late June/early July. Monitor for the presence of pear psylla using your most sensitive pear variety (e.g. Bartlett): for summer generations, examine at least 10 recently expanded shoot leaves on each of at least five trees per block. A suggested action threshold at this time is 1.5 nymphs per leaf. If

necessary, target insecticide applications at the early nymphal stages.

**Apple leaf-curling midge.** A few characteristic leaf-roll galls have been observed in the past two weeks. Look for marginal leaf-rolls that curl inwards towards the mid-rib on the upper leaf surface; the small orange larvae are found within. This species is not generally an economic pest on bearing trees, but high populations may affect the growth of young trees and nursery stock. Control options under such conditions include Movento.

**Spotted wing drosophila**

No SWD have so far been recorded at our monitoring sites. Growers of susceptible fruits are advised to install SWD monitoring traps as soon as possible, both within the crop and in bordering hedgerows, where the flies are usually caught a few days prior to entering the crop. Keep in mind that while trap catches are an indication of adult presence, they are only that: fruit is not susceptible until it starts to ripen and show color. Growers are advised to check early ripening fruit closely for larvae using a salt flotation test (a good (short!) video of this technique is available at: https://www.youtube.com/watch?v=2X_F3bHiOSg ). Updated versions of the insecticides currently registered in NY for this pest are now available at: http://fruit.cornell.edu/spottedwing/management/



## Fertilization and Irrigation for the On-Farm Apple Nursery the First Season

Terence Robinson, Lailiang Cheng, and Mario Miranda Sazo

The intensity of management the first season depends on the type of tree being produced. For the traditional tree production scheme or the 3 year tree the goal the first year is establish the rootstock, grow a strong root system and grow the top with moderate vigor to reach budable size by August. Thus a less intensive management program is required the first year. However, for the 1 year bench graft and sleeping eye production schemes there is only one year in the nursery during which the scion is grown and the finished tree produced. This requires a much more intensive management program to achieve good caliper, adequate tree height and some side branching. With the knipboom tree an intermediate intensity of management is used the first year. With this tree type, the goal the first year is to grow the scion to a moderate height and caliper to allow heading the tree back to 24-25 inches above ground level for vigorous second year growth.

Regardless of the tree type being produced, after rootstocks or grafted plants are planted, pack the soil carefully around the roots eliminating all air pockets around the soil and roots. Air around the roots will dry out and kill the limited and fragile root system. Water the newly planted bench grafted trees immediately after planting to settle the soil around the roots. The application of one gallon of a 20-20-20 starter solution fertilizer per tree will help to settle soil around the roots and provide an early feed for the newly established nursery. This solution is made by dissolving 6 lbs. of 20-20-20 fertilizer in 100 gallons of water.

Irrigation, fertilization, and weed control are the major management inputs that determine final tree size. Intensive fertilization (both

ground and foliar, Table 1) and excellent weed control will give the largest final tree size.

Table 1. Fertilization program suggested for on-farm nursery trees the first year.

| | |
|---|---|
| **Ground application** | • Use 80 to 120 lbs of nitrogen per acre<br>• Equally split between 3 to 4 applications at every 3 weeks from now to early August<br>• Calcium nitrate is preferred |
| **Fertigation method** | • Use 20-10-20 with micronutrients at 150 to 200 ppm nitrogen once per week<br>• Provide 1/2 to 3/4 gallon solution to each tree from now to Aug 1 |
| **Foliar application** | • Use 5 lbs Urea/100 gallon<br>• Apply 2-3 applications at 2-week intervals |

There are two types of fertilizer injectors that can be used for fertigation; venturi injectors (concentration in water stream stays constant, doesn't need electricity, it costs ~ 300-400 dollars) and positive displacement pumps (more expensive, concentration in water stream stays constant, do need electricity, and it is the most accurate way to meter fertilizer into water stream).

**Weekly dose of fertilizer (NY strategy):** (1) Total amount of fertilizer to be applied per year is divided by the number of weeks over which fertilizer is to be applied; (2) the weekly dose is applied in one irrigation cycle on one day of the week; and (3) if additional water is needed, it is applied without dissolved fertilizers.
Advantages with this strategy: The total amount of fertilizer to be applied can be programmed.
Problems with this strategy: The concentration of fertilizer in the soil solution declines when non fertilizer water is applied

**Weekly dose strategy:**
**First year**
N=50-60 lb/acre/year over 10 weeks or 5-6 lb/acre/week (June, July, and first two weeks of August)

**Second year (assuming trees won't be dug in the fall):**
N=130-180 lb/acre/year over 10 weeks or 13-18 lb/acre/week (June, July, and first two weeks of August)
**Second year (assuming trees will be dug in the fall):**
N=150-200 lb/acre/year over 14 weeks or 11-14 lb/acre/week (June, July, August, and first two weeks of Sept.).

Maintaining optimum soil moisture is essential to producing large nursery trees. Frequent light irrigations throughout the growing season will keep moisture at adequate levels in the nursery. As a rule of thumb we need about 1 acre inch of water per week in the hot part of the summer (June, July, and August) provided by a combination of rainfall and irrigation. The amount of irrigation water per week depends on the amount of rainfall that occurs with less irrigation on wet weeks and more when it is dry. The trick is to supply roots with adequate water without overwatering and encouraging root diseases or asphyxia of the root system. Maintaining good moisture status is absolutely essential to ensure optimum tree growth and health.

Irrigation water can be supplied by sprinklers (movable pipe or big guns) or by trickle

irrigation. A semi-permanent irrigation system in the nursery can make watering easier and more effective. An inexpensive T-Tape irrigation line is effective and easy to install. Water can be supplied to the T-Tape with an above ground lay-flat header.

## EatFresh WNY!

Cornell University Cooperative Extension Niagara County

Cathy Maloney and others at CCE-Niagara have developed a smartphone-friendly website, http://eatfreshwny.com/. Their mission is to connect consumers to Western New York's plentiful local food culture. EatFresh WNY makes it easy for users to find fresh, locally-grown food. Also listed are cideries, breweries, wineries, meat markets, u-picks, farm stands, seasonal activities, and more. Building a relationship with WNY's agricultural resources has never been easier! Users can search for farmer markets, cideries, farm stands, u-pick farms, local food events, and more. **Get your business listed on this site for free!** Click the "Suggest an Attraction" button and list your information. ***Note – EatFresh WNY is currently listing only businesses located in Erie, Niagara, and Orleans Counties at this time.**

## Mark Your Calendars

| **Meeting title** | **2018 CCE LOF PGR Orchard Tour** |
|---|---|
| Date | Friday, June 29 |
| Time | 8:00am-1:30pm: Talks and tour of PGR research plots at the NYSAES<br>2:00-5pm: Tour followed by a lunch buffet and a grower celebration at the Ramada Lakefront Hotel in Geneva |
| Location | NYSAES, Geneva, followed by a social gathering at the Ramada Lakefront Hotel |
| Cost | Free (there is a mandatory registration, see below) |
| Brief description of meeting | There will be a talk followed by a tour of research plots to understand how plant growth regulators affect vegetative, reproductive, and fruit growth of apple with invited speakers Duane Greene and Poliana Francescatto. The tour will be followed by a lunch and a celebration with growers. |
| Registration/Contact for information | Please notice that the lunch is FREE and it will only be included to those who attend the morning talk, PGR orchard tour, AND pre-register at our CCE LOF website by Monday June 25.<br>**To register & more details**, please click here https://lof.cce.cornell.edu/event.php?id=954 |

## Mark Your Calendars

| **Meeting Title** | **LOF Summer Tour** |
|---|---|
| Dates | Thursday, July 12 |
| Time | All Day |
| Location | Wayne County |
| Cost | Free, Thanks to our Sponsors. Sponsors, online sponsorship here: https://lof.cce.cornell.edu/sponsorship.php |
| Brief description of meeting | Annual tour featuring the following cutting edge farms: Smith Brothers Farms, VanDeWalle Fruit Farm, and Cherry Lawn Farms. Attendees will see tree decline on NY-1, a successful On-farm nursery, large new tall spindle plantings of high-value varieties, the economics of new high density plantings, hail-netting, soil health, and more! |
| Registration/ Contact information | Free, thanks to our sponsors, stay tuned to our website and newsletter, registration opening soon |

| **Meeting Title** | **IFTA 2018 Summer Tour** |
|---|---|
| Dates | July 22-25 |
| Time | All Day |
| Location | Kelowna, British Columbia |
| Cost | Varied, see website at : https://www.ifruittree.org/ |
| Brief description of meeting | Annual Summer tour featuring cutting edge farms in an outstanding location |
| Registration/Contact information | See website at : https://www.ifruittree.org/ |

| **Meeting Title** | **LOF Young Growers Tour** |
|---|---|
| **Dates** | August 2-4 |
| **Time** | Depart (via bus) WNY Thursday morning, travel home Saturday AM |
| **Location** | Adams County Region, Pennsylvania |
| **Cost** | TBA, subsidized by sponsors. Sponsors, online sponsorship here: https://lof.cce.cornell.edu/sponsorship.php |
| **Brief description of meeting** | See more details in newsletter issue # 7 or on our website... Annual tour to other commercial tree fruit production regions for future farm owners and leaders |
| **Registration/ Contact for information** | Please **PRE-REGISTER with Kim Hazel**, at krh5@cornell.edu or 585-798-4265, ext 26, then she will notify you in a few weeks with the cost estimate and when online registration is open.<br>Stay tuned to our website and newsletter.<br>For more info or to be put on the Young Growers email list, contact Craig at cjk37@cornell.edu, 585-735-5448 |

## Mark Your Calendars

| | |
|---|---|
| **Meeting Title** | **Western NY Hard Cider Tour** |
| **Dates** | Monday, August 6 |
| **Time** | All Day |
| **Locations** | Wafler Nursery in Wolcott (Bill Pitts, commercial nursery production of hard cider varieties) , Lagoner Farms & Embark Ciderworks (Jake & Mitzi Lagoner, new hard cider plantings, and lunch), DeFisher Fruit Farm and Rootstock Ciderworks (Dave DeFisher, hard cider plantings at more traditional densities). After the conclusion of the educational program, there is an optional stop to taste local ciders at Müllers Cider House, Rochester. |
| **Cost** | Orchard Tours and Lunch at a minimal cost with Pre-registration |
| **Brief description of meeting** | Come visit the nursery and orchards of some of the first NY growers of European and American Hard Cider varieties. |
| **Registration/ Contact for information** | TBA, Stay tuned to our website and newsletter.<br>For more info or to be put on the Cornell Hard Cider list,<br>contact Craig at cjk37@cornell.edu, 585-735-5448 |

***For additional information about upcoming events and registrations visit our website at***

***http://lof.cce.cornell.edu***

***Sponsors: Multiple Opportunities for Summer Meeting Sponsorships at:***

***https://lof.cce.cornell.edu/sponsorship.php***

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# Fruit Notes

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## Fruit Specialists

Craig Kahlke I 585-735-5448 I cjk37@cornell.edu
**Team Leader, Fruit Quality Management**

**Areas of Interest:** Fruit Quality and factors that affect fruit quality before, during, and after storage,

Mario Miranda Sazo I 315-719-1318 I mrm67@cornell.edu
**Cultural Practices**

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

Tessa Grasswitz I 585-261-0125 I tg359@cornell.edu
**Integrated Pest Management (IPM)**

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

Mark Wiltberger I 315-272-8530 I 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**