

# Orchard Outlook



Vol. 17, No. 9

June 7, 2017

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## Bud Development

Earlier cultivars are into the 8-12 mm size and the ideal range for chemical thinning applications. Later cultivars and later areas still have some blocks in late bloom (Figure 1). Pear fruitlets are sizing quickly, peaches are in shuck while plums and cherries are beyond the shuck stage.



**Apple:** Late Bloom to 12 mm



**Pear:** 6-14 mm



**Peach:** Shuck  
Split/Fall



**Plum:** Shuck Fall

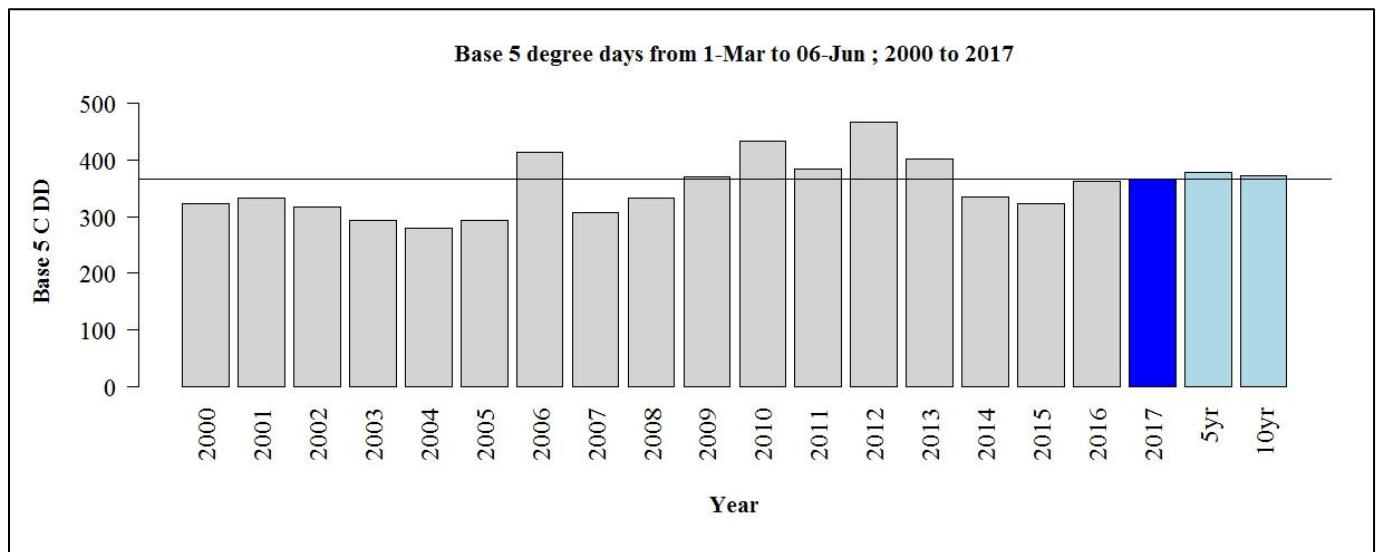


**Sweet Cherry:** Marble Sized Fruits

**Figure 1:** Tree fruit buds observed on June 6<sup>th</sup>, 2017 in the Kentville/Greenwich area.

### Degree Day Accumulations

Degree day accumulations from March 1<sup>st</sup> to June 6<sup>th</sup> is close to the 5- and 10-year averages for this point in the season (Figure 2).



**Figure 2:** Degree day accumulations from March 1st for the past 18 seasons. Provided by Jeff Franklin (AAFC).

To date heat accumulation since March 1<sup>st</sup> is (Figure 2):

- About 3% fewer plant development heat units compared to the 5-year average.
- About 2% more plant development heat units compared to 2016.
- About 11% fewer insect development heat units compared to the 5-year average.

## **Diseases**

### **Apple & Pear Scab**

A single scab infection period was recorded this past week at Kentville AAFC. Wetting began at 7:00 pm on Wednesday, May 31st and lasted until 10:00 am on Thursday, June 1st for a duration of 15 hours at an average temperature of 13.0°C resulting in a moderate primary infection plus a secondary conidia infection where primary infections have become established with visible lesions. The ascospore maturity model is now predicting that 99.9% of the seasonal ascospore load has matured to date. It is possible that some ascospores remain in the leaf litter but this should be the final week for ascospore infections from the overwintering scab spores. After this time, growers should wait 1-2 weeks to allow any symptoms to develop from the last primary infections before considering reduced rates and longer intervals of fungicide sprays where labels allow (e.g. Captan/Maestro).

Remember to consider summer disease control (e.g. Black Rot etc.) when making fungicide selections now that fruitlets are present. Also note that the pre-harvest interval for EBDC fungicides (e.g. Manzate, Dithane, Polyram) for fruit destined for the United States is 77 days versus 45 days for the domestic market. An application of Manzate on June 15<sup>th</sup> would require until the 1<sup>st</sup> of September to meet pre-harvest requirements for the United States.

### **Powdery Mildew**

Monitor young, non-bearing trees for powdery mildew infections to prevent reduction of terminal growth in newer plantings. New mildew infections are now being observed on susceptible cultivars (e.g. Honeycrisp, Gala, Paula Red). On young trees still filling space, powdery mildew protection should be maintained while terminal shoots continue to grow which may be into August or later in some cases. Low rates of sulphur (3-5 kg/ha) will be effective in suppressing powdery mildew on young trees.

### **Fire Blight**

Continue to monitor Maryblyt models for blocks with remaining bloom and newly planted orchards which will bloom later. Alana Respondek (Scotian Gold Cooperative) did find what looks to be a blossom blight infection on single flower cluster this week. However, models suggest most symptoms from the May 19<sup>th</sup> infection should need another week to become visible in the orchard. Some areas of the Valley received a hail event over the weekend. As we have had relatively cool weather as of late, mostly cooler temperatures during bloom, and symptoms are not yet predicted from the possible blossom infections, I doubt this hail event is going to have much effect on fire blight. However, those that did receive hail should contact their crop insurance representative to notify them of possible crop damage.

### **Fire Blight – Shoot Blight Management & Apogee**

The first Apogee applications have been made in many blocks over the past 1-2 weeks. If you haven't yet applied Apogee and are intending to, the first treatment should be done ASAP to

maximize the benefit for shoot growth control and fire blight suppression. A second application should be made about 14 days later.

### **Brown Rot**

After shuck fall, fungicide applications for brown rot should be maintained until June drop in cherries and pit hardening in peaches which occurs early to mid-July in Nova Scotia. Fruit again become susceptible to brown rot infections in the final 3 weeks before harvest. This means that early peaches can be susceptible to brown rot infections nearly all season. Remember to check pre-harvest intervals on these products.

### **Insects**

The petal fall/calyx period is a critical period for insect control in tree fruit with a number of pests that need to be addressed. Insect management programs should be based on grower monitoring and/or scouting reports. Please refer to the table in the May 31<sup>st</sup> Orchard Outlook and the Pome Fruit Management Guide for pesticide information.

#### **Mullein Bug & Apple Brown Bug**

Check your scouting reports or monitor for mullein bug, apple brown bug, and tarnished plant bug at calyx by limb tapping.

#### **Spring Caterpillars and Leafrollers**

Winter moth and green pug moth will be in their later stages while other overwintering leafrollers will be active in the canopy (e.g. pale apple leafroller, obliquebanded leafroller).

#### **European Apple Sawfly**

An insecticide for European apple sawfly should be applied as close to petal fall as possible if it is required. EAS damage will be soon be visible over the coming 1-2 weeks.

#### **Rosy and Green Apple Aphid**

Suzie Blatt (AAFC) notes rosy apple aphids and associated leaf curling can now be observed where populations are present at petal fall. Consider other insect control requirements in your selection for an appropriate insecticide if RAA control is warranted. Watch young trees for green apple aphids in the terminals which can interfere with tree structure establishment.

#### **Codling Moth**

Those growers that do their own monitoring for codling moth should have the traps hung in orchard blocks over the next 7-10 days. Jeff Franklin (AAFC) observed some initial catches of codling moth this past week. Biofix typically occurs in the next 7 days in Nova Scotia. The predictive model for timing codling moth treatments will be run and applications will be required later this month where a treatable population is noted.

### **European Red Mite**

Growers that would like to use Agri-Mek (170 mL/ha) plus oil (10 L/ha) for mite control have about 6 weeks after petal fall to apply the product. That being said, it has been noted that residual mite control with Agri-Mek in combination with spray oil is greater from spray deposits on newer leaves compared to older leaves, so it would be best to apply it by the end of the month. Remember to avoid Captan/Maestro in your cover sprays for a minimum period of 7-14 days before/after an Agri-Mek + oil application. Use another fungicide from the Pome Fruit Management Guide.

### **Pear Psylla**

Applications of Agri-Mek (170-340 mL/ha) plus oil (10 L/ha) can now go on pear trees for pear psylla control. The closer the application is made to calyx the more effective it is in controlling psylla. The same precautions around Captan/Maestro fungicide should be taken with pear.

### **Pear Rust Mite**

Pear rust mite, which now would be present on pear trees and newly growing pears, can go unnoticed until the producer sees heavy russetting extending from the base to the top of the fruit. Growers that apply Agri-mek for pear psylla control would also obtain pear rust mite control. Nexter or Envidor would be other options for pear rust mite control.

### **Plum Curculio**

A second application for plum curculio should be made approximately 12 days after the initial application on stone fruits. A second application of a plum curculio product would also be recommended to control apple curculio in pear.

### **Black Cherry Aphid**

Those growers that have plantings of sweet cherry should monitor for black cherry aphid which can interfere with terminal growth, especially on young trees. There are a number of insecticides noted in the Stone Fruit Management Guide.

### **Catfacing of Peach**

Catfacing of peaches is caused by plant bug stinging. This stinging takes place around shuck split/fall and one to two insecticide applications may be required to reduce the incidence of catfacing. Apply one to two applications of one of the pyrethroids listed in the Stone Fruit Management Guide.

### **White Apple Leafhopper**

Sevin applications on mature blocks will control leafhopper but monitoring non-bearing plants for leafhopper. If treatment is required, a neonicotinoid, Sivanto Prime, or Exirel would control leafhopper and also pick up aphids.



## Horticulture

### Pear Thinning

Pear fruitlets range from 6-14 mm and are in the size window for chemical thinning this week.

Maxcel is the only commercially available product registered for thinning pears in Canada. It is registered for fruitlet thinning between 8-14 mm at a concentration of 50-200 ppm. Nufarm suggests a general rate of 5-6 L/acre of Maxcel for thinning pears in heavy set conditions. Daily maximum temperatures should be above 18°C for best activity of Maxcel.

There has not been much use of NAA for pear thinning in Nova Scotia and the product is not registered for thinning pears. NAA has not been a very consistent thinner for pears in Nova Scotia but some growing areas have been successful thinning pears with NAA applied within a week of petal fall. Sevin XLR is not effective on pear thinning and should not be applied. Note Harovin Sundown pear now called Cold Snap is considered to be more difficult to thin like Bartlett.

### Apple Thinning

Fruitset is variable across different blocks and varieties as per usual. I have observed some very heavily set Idared, Honeycrisp and good set on Gravenstein. The earlier developing apples (Gravenstein, Jersey Mac, Paulared, Idared) are into the chemical thinning window now and the weather is finally warming to get some decent thinning activity.

Once again, I encourage growers to consider some earlier thinner applications in 2017, especially with reduced seasonal rates of Sevin XLR, so a second opportunity for chemical thinning may be possible if the first application(s) looks to be weak.

**As always, assess fruit set in your own orchard before making any decisions on products and rates.**

Charlie Embree (AAFC-retired) and Douglas Nichols (formerly of NSFGA) prepared a very useful table and tips for chemical thinning in Nova Scotia. This has not been updated since 2013 but is still very relevant and helpful as it is based on trial work done in NS. See the May 24<sup>th</sup> Orchard Outlook for the attachment. However, please note the recent changes to Sevin XLR below:

#### **CHANGES TO SEVIN XLR MAXIMUM APPLICATION RATE:**

**For the 2017 season, Sevin XLR has a maximum yearly application rate of 3.22 L/ha for trellised orchards and 2.15 L/ha for non-trellised orchards. In cultivars that were typically thinned with combinations of Sevin XLR & NAA or Maxcel with a rate of Sevin exceeding these new yearly maximums, you may need to consider increasing the rate of NAA or Maxcel slightly to compensate for a lower rate of Sevin XLR.**

Chemical thinning is one area where one often encounters rate suggestions in PPM. For information on how to prepare PPM sprays, see the following Perennia factsheet: <http://www.perennia.ca/wp-content/uploads/2015/09/Spray-PPM-for-Web.pdf>

For further information on chemical thinning and thinners, see the factsheet Thinners and Growth Regulators for Fruit Trees: [http://www.perennia.ca/wp-content/uploads/2015/09/THINNERS AND GROWTH REGULATORS FOR FRUIT TREES.pdf](http://www.perennia.ca/wp-content/uploads/2015/09/THINNERS_AND_GROWTH_REGULATORS_FOR_FRUIT_TREES.pdf)

To defruit young trees, a suggestion from Michigan was to use a combination of Sevin XLR at 2.5 L plus Maxcel at 5.0 L per 1000 L of water. A few litres of oil can also be added as a spreader sticker to this combination. A grower in Nova Scotia has tested Sevin XLR at 2.0 L plus Maxcel at 4.0 L plus 2 L oil plus Agral 90 at 0.5 L in 500 L/ha of water with good results to strongly thin young trees. Apply between petal fall and 8-10 mm. A second application can be done before 18 mm if additional thinning needed. NAA can also be used to defruit young trees but tree stress from NAA and reduced growth may result.

### **Calcium (Ca) Sprays**

The goal of Ca sprays is to increase the concentration of Ca in the fruit and reduce the incidence bitter bit at harvest and during storage. Honeycrisp and Northern Spy are quite sensitive to bitter bit. Large fruit of cultivars like Cortland, Gravenstein, and Jonagold are also susceptible. Young trees typically have worse problems with bitter pit. The downsides of Ca sprays are possible advanced maturity and leaf burn resulting in reduced yield and size in some cases.

Ca sprays have traditionally been applied at two-week intervals starting in early July if you are applying four sprays or mid-June for six sprays. Where bitter pit is an annual problem and additional Ca is required, sprays can be continued up until harvest.

Newer recommendations have suggested beginning calcium sprays 1-2 weeks after petal fall (Cornell & Michigan State University Extension) using 1-2.5 kg of calcium chloride flake per 1000 L of water for 3-4 sprays before switching to higher rates of 4.5 kg per 1000 L of water for the later sprays.

Calcium chloride flake (77% Ca) is the most economical Ca material to use but also the highest risk for foliar burn and is corrosive to spray equipment. Other liquid calcium products or calcium nitrate may also be used to provide the same amount of elemental calcium per spray. The cost per unit of active ingredient will be higher with these products. If nitrogen levels are adequate, it is best not to apply additional nitrogen to the trees with calcium nitrate to avoid a reduction in colour development and possible storage issues. Do not apply calcium nitrate past July. Excessive nitrogen can also make bitter pit problems worse.

Ca has very low movement within the tree and needs to be applied directly to the fruit surface to be absorbed. Therefore, thorough coverage is important to cover developing fruit. Ca should not be applied as concentrate. Use higher volume sprays. It is recognized that ensuring adequate boron sufficiency and avoiding excess potassium can also aid in Ca uptake of the tree.

Calcium chloride is compatible with most wettable powder fungicides and pesticides including Captan when applied dilute, however, risk of leaf injury may be enhanced by Captan in some cases. Dissolve calcium chloride in a pail first and thoroughly mix in the spray tank before adding other products. Incompatibility has been observed with Polyram, Epsom salts, and liquid or emulsifiable pesticide formulations in some cases. Also it should not be applied with Apogee.

## **Other Foliar Nutrients**

Magnesium/Epsom Salts – Magnesium deficiency is best corrected with soil applications of dolomitic limestone in Nova Scotia. Foliar application of magnesium should only occur where magnesium deficiency has been confirmed when tissue testing and/or deficiency symptoms indicate it is required. Application of Epsom salts (magnesium sulphate) after bloom at 20 kg/1000 L has been shown to help improve leaf magnesium where required.

Nitrogen/Urea – Foliar urea sprays can be used to supplement soil applications of nitrogen where leaf nitrogen levels are low. For Nova Scotia, this would be below 2.0% leaf N. Post bloom applications are typically 6 kg of urea per 1000 L of spray. If you are applying urea with concentrate sprays in less than 1500 L/ha, reduce the urea rate to 3 kg per 1000 L of spray to avoid foliar burn. Also avoid applying foliar urea during slow drying conditions. Bill Craig notes that leaf colour does appear a bit pale this year likely due to the cooler weather conditions after bloom. However, warmer temperatures should help to green up the foliage.

- **Bees**
  - Honey bees should be moved out of the orchard as soon as possible at petal fall to allow calyx insecticide applications.
- **Weed Control**
  - Herbicide application should be maintained to minimize competition in the orchard. The critical period of weed control extends 30 days after bloom on mature orchards and through July in young blocks.
- **Mowing**
  - Regular mowing of the orchard floor will help minimize dandelion competition with tree fruit flowers during bloom, minimize insect flushes from the ground cover after mowing, and conserve soil moisture as conditions become dry.
- **Tree Planting/Trellis**
  - Prune and support newly planted trees as early as possible after planting to ensure maximum first year growth. Tree tying and leader selection can be done to direct all growth into one desirable leader.

## **Events & Notices**

### **Apple Maggot Eradication Program**

Elizabeth Nichols is the Apple Maggot Eradication Technician again this year. The apple maggot over-winters as a pupa in soil and adults emerge from late June through September, with peak flight into commercial orchards in August. Emergence is closely linked to soil moisture levels— in dry years, some pupae remain in the soil until the following growing season.

Apple Maggot flies are strong fliers and field studies indicate they fly up to 3 km from alternative hosts. Thus, controlling alternative hosts including American hawthorn or wild apple trees within 300 meters of commercial orchards helps to reduce pressure from migrating flies.



Elizabeth is here to help growers control apple maggot so if you are aware of any hawthorn or wild apple trees within that 300 m radius, please contact Elizabeth at (o) 902-678-1093; (c) 902-670-3599; or enichols@nsapples.com.

### **Brown Marmorated Stink Bug**

Researchers are on high alert for the Brown Marmorated Stink Bug which has damaged apple crops in the US. These pesky bugs have gone from 2 or 3 states in 2010 to 43 states in 2017, wreaking \$37m worth of havoc on the apple industry in the northeastern US alone. They have been found in B.C. and parts of Ontario as well as the Montreal corridor in Quebec. Researchers in the Atlantic provinces have been keeping an eye out for the insect since 2012. At this time, there have been no captures in Nova Scotia or New Brunswick.

Nova Scotia has one type of stink bug already and if the brown marmorated bug was to do in Canada what it did in the US, it would become a real problem for agriculture, in particular, the tree fruit industry, earning it as much of a bad reputation as the apple maggot.

This stink bug has unique characteristics: distinctive white bandings on its legs and antennae, inward-pointing white triangles between dark markings along the edge of the abdomen, and a smooth edge along the pronotum or “shoulders.”

If you think you’ve found a brown marmorated stink bug, please contact Dr. Suzanne Blatt of the Kentville Research Station, at [Suzanne.blatt@AGR.GC.CA](mailto:Suzanne.blatt@AGR.GC.CA). Dr. Blatt is asking all growers to be on the lookout for this pest.

Thank you for your attention to these destructive pests. We want to stay on top of them for the sake of our industry.

### **2017 International Fruit Tree Association Study Tour in Michigan – Registration Open**

Considering joining IFTA in Michigan this summer from July 16-July 18th for the 2017 IFTA Summer Study Tour. Our theme for the 2017 IFTA Summer Tour is:

Tree Fruit Excellence – Innovation and Success

The 2017 IFTA Summer Tour offers another fantastic educational opportunity and provides quality networking time with colleagues old and new. With visits to prime fruit-growing areas of Belding, the South Ridge, the North Ridge and Michigan State University, you’ll be able to see and experience all aspects of tree-fruit production.

You’ll learn how Michigan tree fruit growers are investing in new ways to remain competitive and deliver high-quality fruit to consumers at home and around the world. Discussions will touch on tree training, chemical thinning, precision thinning, frost protection, vigor management and managed varieties, among many other topics.

Network with fellow growers as you discover why Michigan is one of the world's leading tree-fruit growing areas and a seat of tree-fruit innovation.

See <http://www.ifruittree.org/Events/2017-Study-Tour> for more information.

**This Orchard Outlook has been published with the input of the Orchard Outlook Committee.**