

# Orchard Outlook



Vol. 16 No. 14

June 22, 2016

Bud Development	2016 Degree Day Accumulations	Disease
Insects	Horticulture	Upcoming Events & Notices

## Bud Development

Checking on tree development Tuesday, apple fruit ranged from 8 to 25 mm with the majority in the 10-16 mm stage (Figure 1). Pears are 20-25 mm fruit size, peaches are 1"-1½" length, and plums and cherries are at June drop.



**Apple:** 8-25 mm



**Pear:** 20-25 mm



**Peach:** 1"-1½" Length



**Plum:** June Drop



**Sweet Cherry:** June Drop

Figure 1: Tree fruit development observed on June 21<sup>st</sup>, 2016 in Greenwich and Middle Dyke Road.

## 2016 Degree Day Accumulations

Degree day accumulations from March 1<sup>st</sup> to June 21<sup>st</sup> are now close to the 5- and 10-year averages (Figure 2).

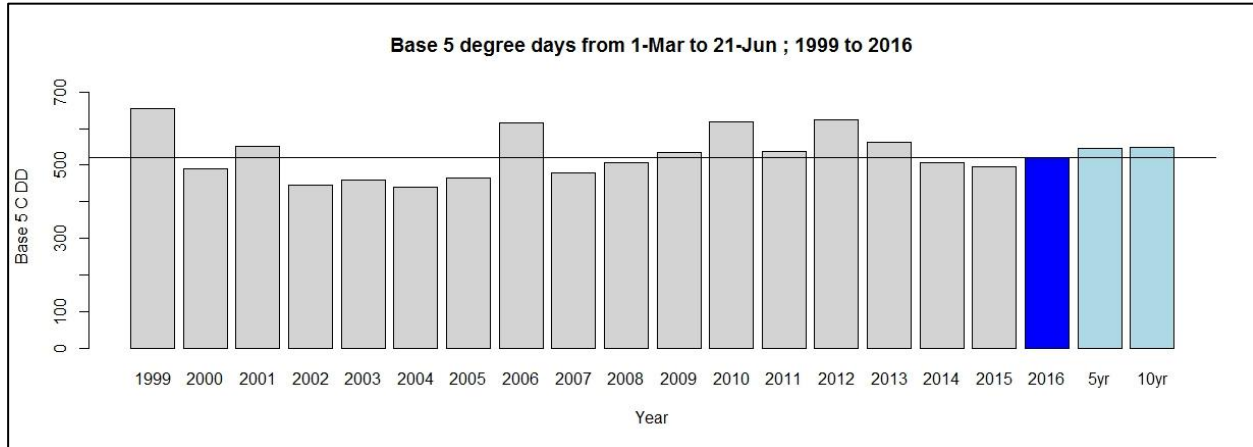


Figure 2: Degree day accumulations from March 1st for the past 18 seasons. Provided by Jeff Franklin (AAFC).

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

- About 4% fewer plant development heat units compared to the 5-year average.
- About 5% more plant development heat units compared to 2015.
- About 8% fewer insect development heat units compared to the 5-year average.

## Diseases

### Apple & Pear Scab

There were no scab infection periods recorded this week at Kentville AAFC. At this point in the season, ascospore release is now complete. Evaluate your primary scab control and if no scab lesions are present, you may consider switching to cover rates of protectant fungicides for your next scab application.

### Fire Blight

Sporadic reports of blossom blight have been reported across the Valley (Figure 3). These infections have been reported in blocks with a previous history of fire blight infection in the past 1-2 years. If blossom blight occurred in your orchard, symptoms should be apparent this week. If you begin to observe blossom blight infections and have not yet made any Apogee treatments to the infected and/or neighbouring blocks, you may wish to treat these areas with Apogee

immediately to provide some resistance to shoot blight infection in 10-14 days. An



Figure 3: Several advanced blossom blight infections in an orchard that did not receive any antibiotic sprays during bloom.

application of a copper product could help give some immediate protection while the Apogee begins to work. Antibiotic products such as Streptomycin or Kasumin will not give curative activity to visibly established infections.

With the presence of blossom blight infections, secondary inoculum is assumed to be present in the orchard for subsequent shoot blight infection. It is still slightly early to be seeing new shoot blight infections. These symptoms will be developing over the next one to two weeks where bacteria is present from primary infections. Symptoms of wilted shoots are now present where bacteria from overwintering cankers has moved internally to infect new shoot growth near the canker.

Growers can begin scouting orchards for the presence of blossom and canker blight. Young orchards with a history of fire blight infection is the preferred place to begin. Where the number of infections is light and can be manageably pruned from the orchard, removal on a dry day and discarding in the row middles will help reduce secondary inoculum production. Removal by pruning should not be attempted where the number of infections would make the chance of accidentally spreading fire blight very high.

**With the presence of ooze a possibility in the orchard, work only in dry conditions in blocks with fire blight as ooze is spread much more easily during wet conditions!**

### **Powdery Mildew**

New powdery mildew infections are being observed where flag shoots were present. Check the underside of curled leaves for the powdery mycelium growth. Non-bearing trees, newly planted orchards, and nurseries should be protected from powdery mildew and apple scab. The impact of powdery mildew on bearing orchards at this point is minimal but infections can impact extension growth on young trees.

**PERENNIA IS COLLECTING FIRE BLIGHT SAMPLES AGAIN IN 2016 ON BEHALF OF AAFC FOR STREPTOMYCIN RESISTANCE TESTING AND OTHER RESEARCH NEEDS.**

**IF YOU LOCATE FIRE BLIGHT IN YOUR ORCHARD, PLEASE CONTACT CHRIS DUYVELSHOFF AT 902-678-7722 OR [CDUYVELSHOFF@PERENNIA.CA](mailto:CDUYVELSHOFF@PERENNIA.CA) SO A SAMPLE MAY BE TAKEN FOR RESISTANCE TESTING.**

**YOUR SPECIFIC FARM OR LOCATION WILL NOT BE IDENTIFIED IN ANY PUBLICATIONS.**

### **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

### Codling Moth

June 10<sup>th</sup> is being used as the date of biofix for establishing treatment windows for codling moth products. The treatment timing for egg hatch products (Assail, Calypso, Delegate, TwinGuard, Confirm, Intrepid, Altacor, and Exirel) is 100 degree days Celcius from biofix. For organic production, codling moth Granulovirus should also be timed for egg hatch around 100 degree days. A comparison of codling moth products is provided below (

Table 1).

For the Kentville model, as of yesterday, approximately 60 degree days have accumulated since biofix. The 100 degree day threshold is currently expected to occur Sunday. Therefore, codling moth treatments could begin through the weekend into early next week. Note, this model is reported for Kentville Agriculture Centre and other areas of the Valley may be slightly different. In general, Kentville is usually one of the earlier areas.

The product Rimon has ovicidal activity and should be applied a bit earlier, usually around 60-80 degree days. Therefore, if you intend to use Rimon for codling moth control, it should be applied by the end of the week.

Control of codling moth with Imidan is typically slightly later at 140 degree days after biofix. This is predicted to be late next week for those intending to use Imidan. Note Imidan is more costly than some of the other products available and has much stricter requirements on REI. Perennia has observed good efficacy of Group 28 Insecticides in trial work which also have better rainfast characteristics than Imidan with similar or lower cost (Table 2). Consider getting experience with alternative chemistries if you have relied on organophosphates for codling moth control. Organophosphate insecticides will not be around for much longer!

There is no need to consider obliquebanded leafroller or apple maggot activity of the first insecticide for codling moth as these pests are not at the correct stage for treatment.

Thresholds for treatment were traditionally 40 moths per trap. However, based on high value varieties, thresholds have moved towards 10-20 moths per trap.

Wondering about rainfall and insecticide activity? The following article is well worth reading from Dr. John Wise of Michigan State University on rainfastness of various insecticide classes:

[http://msue.anr.msu.edu/news/rainfast\\_characteristics\\_of\\_insecticides\\_on\\_fruit](http://msue.anr.msu.edu/news/rainfast_characteristics_of_insecticides_on_fruit)

Some highlights discussed:

- A drying time of 2-6 hours is sufficient for most insecticides to stick the product to the leaf or fruit.
- Neonicotinoids are an exception to the above and up to 24 hours is need for optimal penetration.
- Rainfall of 25 mm (1 inch) or more is generally sufficient to remove most residues required for product efficacy on codling moth including Neonicotinoids (Assail, Calypso), IGR's (Confirm, Intrepid, Rimon), and organophosphates (Imidan). This will require re-application of the insecticide to adequately protect fruit.

- Spinosyns (Delegate, TwinGuard) and Diamide (Altacor, Exirel) insecticides are more rainfast than other products, however, will require application with 50 mm (2 inches) of rainfall.

**Table 1: 2016 Control Options for Codling Moth**

Product	Rate & Max # Applications	REI	Application Timing	Other Pests	~ Cost (\$/ha)
<b>Organophosphate – Group 1B Insecticides</b>					
Imidan 70 WP	2.68 kg/ha Max 5 Apps.	7-30* days	140 Degree Days °C After Biofix	Leafrollers	140
*Additional PPE required for hand-thinning activities within 30 days of application.					
<b>Neonicotinoid – Group 4A Insecticides</b>					
Assail 70 WP	120-240 g/ha Max 4 Apps.	6 days (hand-thinning)	100 Degree Days °C After Biofix	Aphids	100-200
Calypso 480 EC	290-440 mL/ha Max 3 Apps.	12 Hours	100 Degree Days °C After Biofix	Aphids, Leafhoppers, Mullein Bug	80-125
<b>Spinosyns – Group 5 Insecticides</b>					
Delegate 25 WG	420 g/ha Max 3 Apps.	12 hours	100 Degree Days °C After Biofix	Leafrollers	180
<b>Group 4C + Group 5 Insecticide Premix</b>					
TwinGuard	500 g/ha Max 2 Apps.	12 Hours	100 Degree Days °C After Biofix	Leafrollers, Aphids	255
<b>Benzoylureas – Group 15 Insecticides</b>					
Rimon 10 EC	0.93-1.4 L/1000 L Max 4 Apps.	12 Hours	60-80 Degree Days °C After Biofix		75-110
<b>Diacylhydrazines – Group 18 Insecticides</b>					
Confirm 240 F	1.0 L/ha Max 4 Apps.	12 Hours	100 Degree Days °C After Biofix	Leafrollers	120
Intrepid 240 F	1.0 L/ha Max 2 Apps.	12 Hours	100 Degree Days °C After Biofix	Leafrollers	130
<b>Diamides – Group 28 Insecticides</b>					
Altacor 35 WG	145-215 g/ha Max 3 Apps.	12 Hours	100 Degree Days °C After Biofix	Leafrollers	80-120
Exirel 100 SU	500-750 mL/ha Max 4 Apps.	12 Hours	100 Degree Days °C After Biofix	Leafrollers, Aphids, Leafhoppers	95-140
<b><i>Cydia pomonella</i> Granulovirus – Not Classified</b>					
Cyd-X SU Virosoft SU	250 mL/ha	12 Hours	80-100 Degree Days °C After Biofix		

**Table 2: Perennia trial results on codling moth control efficacy 2013-2015.**

Year: 2015	Trap Catches: 16 Moths	Location: Aylesford, NS
Treatment	Product Rate	% Codling Moth @ Harvest
1- Untreated Control	-	0.9 (non-significant damage)
2- Altacor 35 WG	215 g/ha	0.2
Year: 2014-Trial 1	Trap Catches: 13 Moths	Location: Morristown, NS
1- Untreated Control	-	2.5 a
2- Altacor 35 WG	316 g/ha*	0.4 b

	(NOTE ABOVE MAXIMUM LABEL RATE!)	
<b>Year: 2014-Trial 2</b>	<b>Trap Catches: 13 Moths</b>	<b>Location: Morristown, NS</b>
1- Untreated Control	-	1.3 a
2- Altacor 35 WG	172 g/ha	0.0 b
3- Exirel 100 SU	600 mL/ha	0.2 b
<b>Year: 2013</b>	<b>Trap Catches: 39 Moths</b>	<b>Location: Morristown, NS</b>
1- Untreated Control	-	2.5
2- Altacor 35 WG	172 g/ha	1.1 (non-significant control)
3- Exirel 100 SU	600 mL/ha	0.8 (non-significant control)

## Aphids

Check the terminal growth for the presence of Rosy and Green Apple Aphid colonies. An aphid control treatment is recommended if 10% of terminals are infested.

## Mites

European red mite, twospotted spider mite and apple rust mite can be present at treatable levels from now on and into the fall. High numbers will result in foliar bronzing and reduced photosynthetic activity of leaves. The feeding damage can result in reduced production and fruit quality. Mites should be controlled before bronzing becomes apparent. Those growers that make use of a scouting service will need to apply miticides when population thresholds are reached. In mid-June, the presence of European red mite or twospotted spider mite on 35 of 50 leaves examined will act as threshold for treatment.

## Horticulture

### Apple Thinning

The chemical thinning window has closed on early blocks and cultivars at this point. Many mid to later blooming cultivars may still be able to be treated with fruitlet thinners. Size differential is becoming apparent and weaker fruitlets are beginning to abort in early areas (Figure 4).



Figure 4: Honeycrisp fruitlets showing large size differential. Laterals dropped off easily with light pressure indicating they were in the process of aborting.

### Weed Control

Continue herbicide application where weed growth is present. The critical weed free period extends to about 30 days after full bloom for mature plantings and through July for young, non-

bearing trees. Cleaning out competing vegetation now will reduce competition for soil moisture which is already becoming limiting. As a reminder, we are approaching the limit on using 2,4-D for weed control as this product has an 80 day pre-harvest interval. A 2,4-D application today will mean the orchard cannot be harvested until the second week of September.

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

The goal of Ca sprays is to increase the concentration of Ca in the fruit. The benefits of Ca sprays are to potentially reduce bitter bit. 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 should be 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.

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 high 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 flake (77% Ca) is the most economical Ca material to use but also the highest risk for foliar burn. Apply at 4.5 kg per 1000 L of spray solution.

Calcium nitrate at 6.0 kg per 1000 L of spray solution could be used if foliar nitrogen is low. If nitrogen levels are adequate, it is best not to apply additional nitrogen to the trees 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.

Alternatively, there are various other sources of Ca which may be safer products for foliar burn in some cases. The cost per unit of active ingredient will be higher with these products. Their concentrations vary; however, the method with these products is still to apply 3.5 kg of actual Ca per 1000 L of spray solution.

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.

## **Upcoming Events and Notices**

### **NSFGA Annual Orchard Tour**

The NSFGA Annual Orchard Tour will take place on **Thursday, August 4<sup>th</sup>** beginning at 8:30 am at the Kentville Agriculture Centre. Tour agenda will be published shortly.

## **Product Innovation 101 Workshop**

Do you have a great new agri-food or seafood product idea burning a hole in your pocket, but you don't know what to do with it next? Or maybe you're still searching to find inspiration and want to learn more about what is possible in the world of value added food products?

Join Perennia Innovation Centre's Chief Science Officer Eric Albert and Food Scientist Emmanuel Anom along with business consultant Gary Morton to learn where to start and what to consider in developing a value-added product.

June 27th in Bridgewater 10:00 AM to 3:00 PM  
Lunenburg County Lifestyle Centre  
135 North Park St, Bridgewater NS B4V 9B3

For more information, see <https://www.facebook.com/nsperennia/posts/1054337781322337:0>

## **Reminder: Canada-Nova Scotia Fire Blight Initiative!**

This is a reminder that all tree fruit growers with apple and/or pear acreage that required additional management as a result of fire blight occurring after tropical storm Arthur can apply for financial assistance under the Canada Nova Scotia Fire Blight Initiative – a Growing Forward 2 Agri-Recovery program.

### **DEADLINE TO APPLY FOR THIS PROGRAM IS JULY 29!**

Funding includes provisions for recovery of additional chemical costs for all growers. Funding is also available for confirmed tree losses where an industry inspection report was completed prior to July 31, 2015.

For more information on the Canada-Nova Scotia Fire Blight Initiative and how to apply, see <http://novascotia.ca/programs/fire-blight-initiative/>. Questions regarding the program or eligibility should be directed to the Programs and Business Risk Management Branch of the Nova Scotia Department of Agriculture at 1-866-844-4276.

## **Apple Maggot Eradication Technician**

The NSFGA has again obtained funding for a summer technician to aid in apple maggot control efforts.

Please contact Elizabeth Nichols to report wild trees to schedule their elimination.

Please also contact Elizabeth Nichols if you have completely removed blocks so records can be updated for apple maggot inspections.



Elizabeth Nichols  
Apple Maggot Eradication Technician  
Blair House, Kentville Agricultural Centre  
32 Main Street, Kentville, NS B4N 1J5  
Email: enichols@nsapples.com  
Office: 902-678-1093  
Cell: 902-670-3599

**This Orchard Outlook has been published with the input of the Orchard Outlook Committee and Erika Bent (APM).**

Editor: *Chris Duyvelshoff, Perennia*