

Orchard Outlook



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Another week of above seasonal temperatures has pushed development along at a quick pace. Tree development is now only a few days behind where it was in 2014.

Bud Development

Advanced buds of Idared are at bud separation with some pink beginning to show. Apples range from tight cluster to later bud separation (Figure 1). Pears are tight cluster (green cluster) to white bud; peach – pink to early bloom; plum – white bud to full bloom; sweet cherry – white bud to full bloom.



Figure 1: Early pink of apple (top left), tight cluster of pear (top centre), white bud of plum (top right), pink of peach (bottom left), and early bloom of sweet cherry (bottom right). Photo: <http://utahpests.usu.edu/IPM/htm/fruits/home-orchard-guide/> and <http://fruit.umext.umass.edu/tfruit/clements/2004budstages/03312004/03312004-Pages/image3.html>.

2015 Degree Day Accumulations

Heat unit accumulation advanced considerably in the past week. It is still behind the 5 and 10-year averages but is starting to catch up.

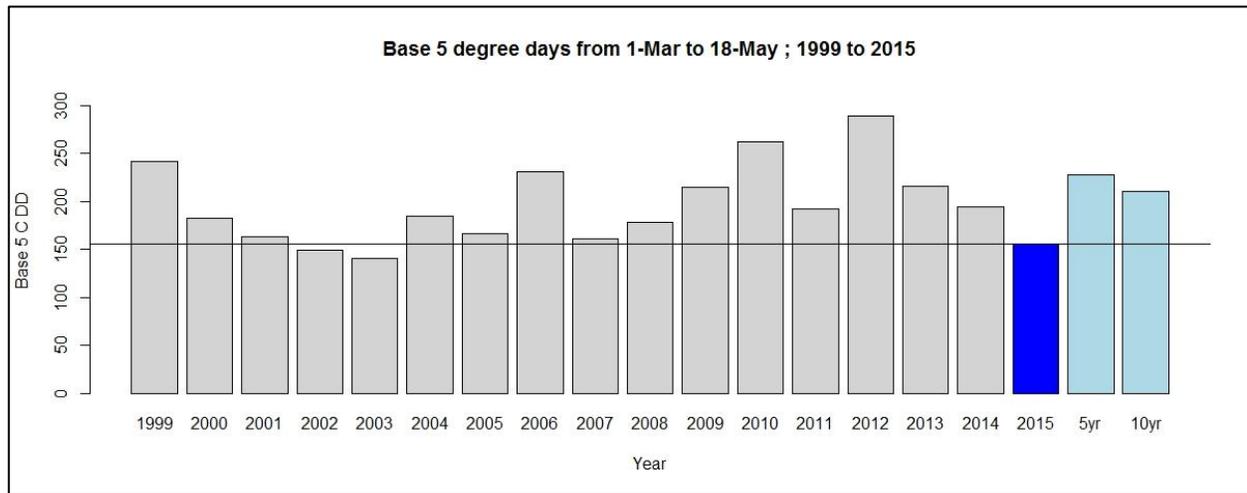


Figure 2: Degree day accumulations from March 1st for the past 17 seasons. Provided by Jeff Franklin (AAFC).

To date heat accumulation since March 1st is (Figure 2):

- About 32% fewer plant development heat units compared to the 5-year average.
- About 20% fewer plant development heat units compared to 2014.
- About 30% fewer insect development heat units compared to the 5-year average.

Diseases

Apple Scab

There were no infection periods recorded at Kentville Agriculture Centre during the past week. The ascospore maturity model is indicating that about 35% of the seasonal ascospore load has matured to date. The last significant release would have been on May 13th when about 15% of the spore load had matured. Therefore, there will be a large release of about 20% of the total ascospore load during the next rainfall period. It would be wise to be covered up for Friday's forecast rain if you haven't made a fungicide application since the weekend.

Powdery Mildew

Most growers have applied a fungicide for powdery mildew in the past week. For blocks that had powdery mildew last year or for cultivars with higher powdery mildew susceptibility (e.g. Honeycrisp, Ginger Gold, Cortland, Paulared), apply a second mildew fungicide at pink. Applying a final fungicide for powdery mildew at calyx should give excellent control of this disease where the pressure is high. A different fungicide group should be used for a third spray. Remember Fontelis (Group 7) and Luna Tranquility (Group 7, 9) are in the same group.

Fire Blight

Fireblight ooze is beginning to be reported from overwintering cankers. Sap on twigs or branches without any cankers nearby is not likely to be fire blight ooze. This is not the time to be using streptomycin which is with open blossoms. However, the delayed dormant copper application should help with killing some of this bacteria oozing from cankers. Copper application at this point to fresh fruit blocks is without question a risk for fruit russetting – especially this spring where we have not had a lot of regular rainfall. Copper application to fresh fruit blocks really should be finished already unless you can accept some fruit marking. Processing cultivars or non-bearing trees can still have copper applications made.

With the first bacterial ooze present, it would be wise to keep sanitation principles in mind while pruning. Prune infected blocks last if possible, sanitize pruning equipment at least a few times a day if possible, and prune infected blocks on clear, dry days to minimize spread. Chlorox bleach or Lysol is a very reliable disinfectant when diluted 10 parts water to 1 part product. A study in California noted Lysol was less corrosive to metals than bleach.

With the pace of development likely to continue over the next week, it is very possible that open blooms may be present on early cultivars in early areas next week. This means the beginning of the risk for blossom blight infection. For those of you running Maryblyt, make sure you have a file started and your weather monitoring equipment is working.

With the cooperation of several organizations, including the Nova Scotia Community College Applied Geomatics Research Group, Agriculture and Agri-Food Canada, and Scotian Gold Cooperative, Perennia will be able to monitor fire blight risk and forecast disease development for a number of locations this coming season.

Daily reports will be generated for Gaspereau, Granville Ferry, Greenwood, Habitant, Kentville, Middleton, Avonport, Rockland, and Sheffield Mills. These reports will include epiphytic infection potential (EIP) values predicted by Maryblyt and will be sent through the Orchard Outlook mailing list.

Streptomycin 17 is the preferred protection material for fireblight but will only provide good protection when applied up to 24 hours before an infection event and 12-18 hours after infection. Therefore, time sprays to periods of high risk. Extension recommendations from NY and MI this spring have focused on treating blocks with streptomycin after several days of warm dry weather during bloom, even without a forecasted wetting period to avoid build-up of inoculum.

The rate of Streptomycin 17 is 600 g per 1,000 L of water to make a 100 ppm solution. A per hectare rate of 1.68 kg has been recommended during bloom this year in NY and MI. Agral 90 surfactant at 500 mL per 1,000 L may be included as a spreader/sticker to improve efficacy. Do not use more Agral 90 than 500 mL / 1,000 L to avoid foliar burn problems. It would be advisable to

have enough material on hand for at least one spray – preferably two – this year so you're ready when high risk periods are forecasted.

Dr. George Sundin of Michigan State University has written a great article on antibiotics for fire blight management here:

http://msue.anr.msu.edu/news/three_antibiotics_available_for_fire_blight_management_during_bloom

Brown Rot

With stone fruits at or approaching bloom, maintain protection for brown rot. There are a large number of materials available for brown rot control so please consult the Stone Fruit Management Guide (link below). Fungicide application intervals for brown rot should be tight during bloom (4-5 days). Warm and wet weather (above 16°C) is especially conducive for blossom infection. All materials listed in the Stone Fruit Management Guide are rated as good to excellent for brown rot control. Rotate fungicide groups for brown rot unless using a fungicide in Group M.

<http://perennia.ca/Pest%20Management%20Guides/Fruits/2015/2015%20Stone%20Fruit%20Management%20Guide.pdf>

For plums, the use of Captan or Indar for brown rot during the white bud stage through fruit set will also give some control of new black knot infections.

Insects

European Red Mite

A of oil has been applied in the past week which will help with European red mite control in the coming season. The warm weather has caused the start of egg hatch meaning the end of the oil window has been reached. Erika Bent (APM) observed hatch beginning this week. The next opportunity to address issues with mites will be at calyx.

Spring Caterpillar Complex

With apples at tight cluster to bud separation it is time to consider management of the spring caterpillar complex. There are several caterpillar larval insects present on apples from tight cluster through calyx on both fruit clusters and vegetative buds. I observed some eyespotted bud moth and winter moth this morning in an abandoned block. Dr. Suzie Blatt (AAFC) reports finding 2nd instar eyespotted bud moth, 3rd instar winter moth, and green pug moth with an incomplete stripe.

Winter moth (WM) is the most common spring caterpillar observed in Nova Scotia. It is difficult to distinguish from the green pug moth (GPM) larvae (the other inch-worm type) at early instars. GPM larvae develop a dark dot which may form into a stripe down the middle of their back which

can be used to distinguish them from WM. Other caterpillars that could be found at this stage of development are speckled green fruitworm (SGFW), and obliquebanded leafroller (OBLR).

Overwintering egg hatch for both WM and GPM coincide closely with bud break. Larvae cause economic damage from chewing on young leaves and blossoms. Feeding can be observed at tight cluster as tiny holes in new leaves and flower buds and black specks (i.e. frass). Scouting procedures are described in Perennia's **Best Management Practices for Nova Scotia Apple Production**. Check your scouting reports for notes on WM, GPM, and other caterpillars for those with scouting services.

Thresholds for WM are lower than those of GPM. WM is of greater concern than GPM as larvae of GPM mature before calyx and don't feed directly on developing fruitlets. Instances of orchards where treatable populations of only GPM occur are rare.

If a treatment for just WM is required, than a Bt product (e.g. Dipel or Bioprotec) with a 1/10th rate of Ripcord applied at bud separation has been very effective with a minimum impact on beneficials. If treatments for OBLR (e.g. Twinguard, Delegate, Success, Confirm, Altacor, Exirel) are required at pink, they should have some activity on WM and GPM. Similarly, if a pyrethroid is applied for tarnished plant bug, it will also have activity on WM and GPM. When possible, full-rate pyrethroids are best kept as a last resort because of their negative impact on beneficial insects and predator mites.

Treatments for spring caterpillars should not be applied until bud separation so product can enter the developing flower clusters. This will occur over the next week in many areas.

Aphids

Dr. Suzanne Blatt and Jeff Franklin, have noted egg hatch of rosy apple aphid (RAA) and black cherry aphid in the Research Centre plots. Rosy apple aphid females called stem mothers have now begun to hatch and will feed on cluster leaves causing leaf curling and start to produce live young. Cortland, Gravenstein, and Idared are more susceptible to injury from RAA. Scouting requires examining clusters for the presence of RAA colonies from tight cluster to pink and is described in **Best Management Practices for Nova Scotia Apple Production**.

Insecticide treatment for RAA is most effective when aphids are fully exposed and before they curl the leaves. Therefore, pre-bloom treatment does offer an advantage over calyx application. Those with a history of rosy apple aphid infestation may want to consider an insecticide application at pink. Pre-bloom product choices include neonicotinoids: Actara, Assail, Calypso, Closer, the premix Twinguard, and the diamide Exirel. Exirel and Twinguard may also pick up some of the spring caterpillar complex. Exirel applied for RAA at pink will also have some activity on the overwintering European apple sawfly. Observe all bee toxicity warnings for all of the products mentioned.

Treatments for black cherry aphid are best timed to petal fall.

European Apple Sawfly

The first adult European apple sawfly (EAS) has been caught this past week at the Kentville Agriculture Centre. Typical control timing for EAS is at petal fall using Assail, Calypso, Altacor, or Exirel. For orchards with a history of sawfly damage, a pink application of one of these products can help get a jump on EAS management in advance of egg laying at bloom. An application of Assail, Calypso, or Exirel at pink will also control rosy apple aphid and have some activity on tarnished plant bug.

Tarnished Plant Bug

The overwintering adult population of tarnished plant bug (TPB) peaks during pink and bloom and activity is now present in some orchards. If treatments are required for TPB based on orchard history and monitoring, they should go on at the pink stage. Pyrethroids have the strongest activity on TPB and their application at pink will also reduce spring caterpillars, some rosy apple aphid, and European apple sawfly – if they have emerged. If the neonicotinoids Assail or Calypso are applied for RAA, they will also have moderate activity on TPB, but shouldn't be relied upon for control in high pressure, high value orchards. As a reminder, pyrethroids are harsh on beneficial insects and predator mites and should only be used where potential losses justify their application. Erika Bent notes that pyrethroid application before bloom for TPB does not affect the other stinging bugs (i.e. apple brown bug and mullein bug) which appear later in the season at calyx.

Horticulture

- **Pollination**
 - Honeybees should be moved into the orchard for pollination purposes in the coming week as many areas approach bloom.
- **Grafting**
 - Topworking trees with bark grafting can start in the coming week as bark slipping becomes easier.
- **Fertilizer**
 - Granular fertilizer applications should be completed before bloom for best results. Apply nitrate to nurseries on a dry day just prior to rain to avoid burning buds.
- **Herbicides**
 - Herbicide application should be made to orchards as soon as possible to maximize the weed free window. Gramoxone on nurseries should be applied before the buds break.
- **Tree Planting**
 - Tree planting has begun in many areas, soil conditions are generally good for planting and it is nice to see the trees go in mid-May.

- **Foliar Sprays**

- Where deficiencies indicate foliar boron is required, the application at pink is the ideal time for improving fruit set. Remember the incompatibility with boron and solupacks and not to tankmix zinc and boron.

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

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