Orchard Outlook

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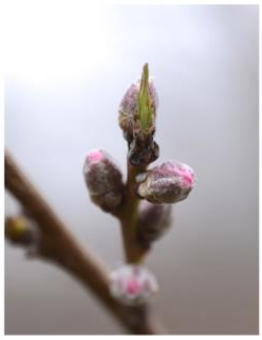
Bud Development

On May 1st, bud development of Idared was half-inch green at Middle Dyke Road (Figure 1). Early developing varieties are approaching half-inch green and most varieties have reached green tip.

Apple: Green Tip – Half-inch Green

Pear: Bud Burst



Peach: Swollen Bud – Half-inch Green

Plum: Bud Burst

Apricot: First White Stage

Sweet Cherry: Bud Burst

Figure 1: Tree fruit buds observed on May 1st, 2018 in the Kentville/Greenwich area.

2018 Degree Day Accumulations

Degree day accumulations (base 5°C for plant development) from March 1st to May 1st show that 2018 is equal to the 5-year average and slightly behind the 10-year average (Figure 2).

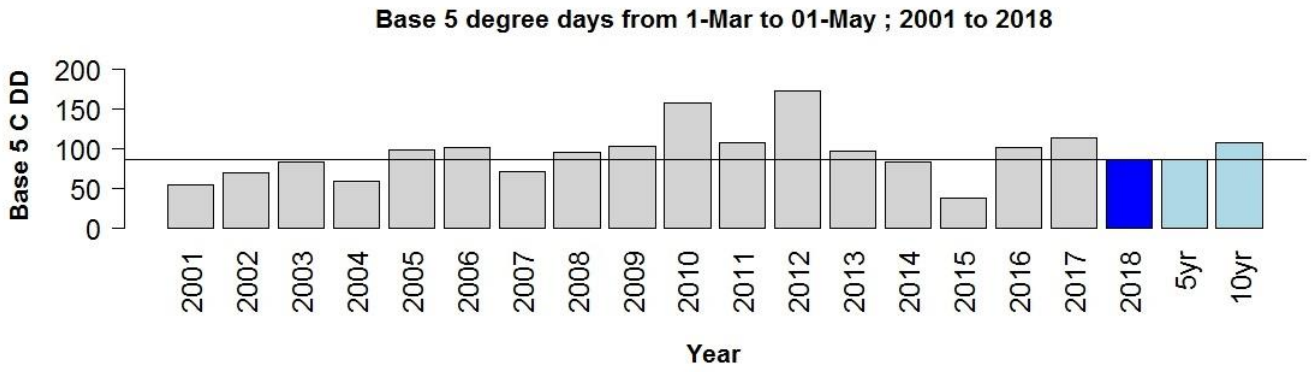


Figure 2: Heating degree day accumulations for plant development (above 5°C) from March 1st to April 24th for the past 17 seasons. Provided by Jeff Franklin (AAFC).

Heating degree day accumulation from March 1st through May 1st:

- Approximately equal plant development heat units compared to the 5-year average, and 19% less compared to the 10-year average.
- Approximately 24% less plant development heat units compared to 2017, and 17% less compared with 2016.
- Approximately 5% more insect development heat units compared to the 5-year average, and 20% less compared to the 10-year average.

Diseases

Apple – Apple Scab

The Ascospore Maturity Model estimates about 18% of the ascospores have matured as of May 1st. During the last week, if green tissue was present it might have been exposed to 2 infection events– depending on your local weather conditions. The weather station did not record an infection on the morning of Tuesday May 1st.

Table 1: Apple scab infection events at the Kentville Research Station for April 25th to May 1st, based on the Modified Mills Table. Forecast infections are shown in orange and are estimates.

No.	Date	Wetness Duration (hrs)	Average Temp (°C)	Type (Primary or Secondary)	Notes
1	April 26	8	13.7	Primary-None to Light	Wetting began at 7:15 am on Thursday, April 26th with intermittent wetting lasting until 3:30 pm. A light infection would have occurred under 10 hours of wetness. This is a borderline infection, depending on your microclimate.
2	April 29-30	20	8.0	Primary –Light to Moderate	Wetting began at 8:45 pm on Sunday, April 29th with intermittent wetting lasting until Monday at 4:45 pm. The intermittent dry periods were shorter than 8-12 hours so this wetting period is a single infection event. If sufficient drying did not occur late afternoon on Monday, the extra 3 hrs for moderate infection could have occurred.
Forecast May 4		16	11.0-12.0	11.5 hrs = light 16 hrs = mod 24 hrs = heavy	Rainfall currently forecast for Friday in Kentville will likely result in an infection period according to the Modified Mills Table. All forecasts are estimates. Review weather forecasts closer to the event.

Recommendations:

- Reapply fungicide protection on a 7 day interval, with a shorter interval after wet weather (cumulative 1-2" rain) or rapid tissue growth. Over an inch (25 mm) of rain has fallen since the first reports of green tip on April 26th. For growers who applied fungicide last Friday, orchards will require fungicide renewal prior to the next infection period.
- If a protectant fungicide is NOT applied to green tissue prior to an infection event, consider a fungicide with post-infection (kick back) activity. Fungicides with a relatively long post-infection activity of 48 hrs include: Flint, Fontelis, Inspire Super, Luna Tranquility, Scala, Sercadis, and Sovran. Tank mix with a group M for resistance management.
- Syllit in combination with a group M is a good choice prior to rain (~12 mm) because water will redistribute the fungicide to new growth. Do not apply more than 2 applications per year. Dithane, Manzate, and Penncozeb are also redistributed very well.
- Products that have very good retention after 50 mm of rain include Dithane, Maestro, Supra Captan and Syllit.
- Early in the season, there is no need to control powdery mildew so products with activity on powdery mildew can be saved for application at half-inch green.

Fire Blight

The goal of copper application is to cover the bark with copper to reduce the population of bacteria on plant surfaces that are spread from bacterial ooze – typically during Pink. The copper treatment will reduce the initial inoculum and theoretically limit the spread of fire blight bacteria to blossoms or wounded tissue on the tree. Copper residues need to remain until bloom when ooze is active for the protectant effects of this treatment. This strategy is most effective in blocks that had fire blight cankers in the previous two seasons. Copper does not control fire blight bacteria within the tree after it has been infected.

Recommendations:

- A copper application will likely be appropriate in many areas this week where buds have reached green tip.
- Target copper applications for green tip to ensure that copper is present during bloom but so residues do not persist on fruitlets where they cause russetting.
- A fixed copper product such as Copper Spray Fungicide (50% copper oxychloride) is recommended because it is resistant to being washed off by rain. Cumulative rainfall of 100 mm will wash away most of the copper product, which is why copper is applied no earlier than green tip.
- Copper can be applied as a tank mix with 0.5% by volume (5 L in 1000 L) dormant oil to increase adherence. Apply in a high water volume to cover plant surfaces. Do not use dormant oil within 14 days of Captan or within 48 hours of freezing temperature. A half rate of an EBDC can be included as extra protection for apple scab.

Phytophthora Root and Crown Rot

As follow up to the Orchard Outlook from July 2017, growers are continuing to report weak or dying trees caused by the fungal pathogen Phytophthora. The most visible symptoms are general tree decline including orange bark, discoloured leaves and twig dieback. Trees infected by Phytophthora often have a discoloured

crown, and cutting away the bark reveals a sharp contrast between green living tissue and reddish-brown diseased wood (Figure 3). The Phytophthora pathogen has been isolated and confirmed in several cases.

Phytophthora is a fungal pathogen that requires a period of saturated soils (~24 hrs) in order to infect and cause disease. This soil-borne fungus spreads in saturated soils, and wounded trees are most susceptible to infection. To estimate when an infection occurred, consider that the time delay between infection and tree death can last several years. In a study where Phytophthora was inoculated on the collar of four-year old apple trees, the trees died after 18 to 24 months. Periods of extremely wet weather and damage to trees suggests the need to monitor for symptoms of Phytophthora in the following months.

Figure 3: Apple tree infected with crown rot caused by the fungal pathogen Phytophthora. After cutting the bark, a diagnostic symptom of Phytophthora is a sharp contrast between green living tissue and brown diseased wood.

If high pressure from Phytophthora infection in a field is known, it presents serious concerns for young apple trees to the extent that you might reconsider your planting site. Consider the following recommendations to protect your planting, if needed.

Recommendations:

- Phytophthora can resemble the symptoms of rootstock blight when fire blight ooze is not present. If in doubt, ask to have the issue confirmed.
- Take caution when choosing a new planting site. The same species of Phytophthora that infects strawberry plants also infects apple and pear trees.
- Do not allow irrigation to saturate soils for 24 hrs. Allow the ground to dry between wetting.
- Consider fumigation with PicPlus to lower initial inoculum. Follow up with a drench on planted rows with Ridomil Gold 480EC during the spring and fall of non-bearing years. During bearing years, apply a foliar program of the systemic fungicide Aliette for the best protection.
- Plant new rows in old alleyways where a smaller population of Phytophthora accumulated. Ensure that soil is not compact.
- Consider preparing the land with a cover crop of mustard that reduces pressure from Phytophthora, when incorporated within 2 hours of cutting. Cut prior to seed generation.
- Monitor the site's drainage and make improvements such as tile drainage to reduce the frequency of soil saturation. Plant trees on ridges to keep water away from the graft union if the site is prone to saturation.
- Consider rootstocks that are Phytophthora resistant. Resistant rootstocks in a field with high pressure from Phytophthora still benefit from a periodic drench with Ridomil to discourage populations of Phytophthora.

Powdery Mildew

If you have a history of powdery mildew infections, start a management program at half-inch green to tight cluster. Refer to the 2018 Pome Fruit Management Guide for product suggestions.

Insects

European Red Mite

To be most effective, oil application for ERM should be targeted closer to egg hatch – around tight cluster. Oil for ERM can be tank-mixed with your application of copper for fire blight at green tip. Avoid oil if freezing temperatures will occur within 48 hrs.

Horticulture

- **Fertilizer**
  - Bud break to bloom is the ideal time for granular fertilizer application to maximize tree growth. Where the need has been demonstrated, foliar nutrients can also improve tree growth.
- **Herbicide**
  - Studies have shown maintaining weed free strips from bud break to 30-days after full bloom has the greatest impact on tree growth and yield.
- **Pruning**
  - With bud break beginning, ensure that your youngest blocks are pruned first to ensure growth is directed into desirable leader and terminal extension.

Events & Notices

North Medford Weather Station

The battery is not holding its charge at the North Medford weather station. As soon as we realized the issue, a new battery was ordered and it is expected to arrive this week. We will install it immediately.

Organic Apple Management Guide

http://www.perennia.ca/wp-content/uploads/2015/09/2018-Organic-Fruit-Spray-Guide_final.pdf

Updates include:

- Dormant to bud swell: Scale (pure spray green oil, superior oil, vegol crop oil) and fire blight (copper)
- Green Tip: European red mite (vegol crop oil)
- Half inch green: Powdery mildew (Cosavet DF Edge, Vegol crop oil)
- Bloom: Codling moth (Isolate-CM/OFM TT)

Hyperlinks to Tree Fruit Management Guides

- Pome Fruit
- Stone Fruit
- Organic Apple

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

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