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News

- Work is underway to make AgWeather Atlantic available online again, including the Maryblyt model, prior to bloom. Stay tuned.
- Vydate is the only product registered for control of nematodes in non-bearing apple trees. Vydate will be available for commercial sale in the 2020 growing season.
- Product re-evaluation decisions have a phase-in period over several years but currently that period is not evident for all products (particularly whether growers have 2 or 3 years after the decision). The PMRA is working to provide clarification. Stay tuned.

Bud Development

<table>
<thead>
<tr>
<th>Early Regions</th>
<th>Current Stage</th>
</tr>
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<tbody>
<tr>
<td>(Kentville/Greenwich)</td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td>Late green tip</td>
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<tr>
<td>Idared</td>
<td>Early green tip</td>
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<tr>
<td>Honeycrisp</td>
<td></td>
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<tr>
<td>Pear</td>
<td>Bud burst</td>
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<tr>
<td>Sweet Cherry</td>
<td>Bud burst</td>
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<tr>
<td>Peach</td>
<td>Swollen bud</td>
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<tr>
<td>Plum</td>
<td>Bud burst</td>
</tr>
<tr>
<td>Apricot</td>
<td>Swollen bud</td>
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2019 Degree Day Accumulations
Degree day accumulations (base 5°C for plant development) from March 1st to April 23rd show that 2019 is above the 5- and 10-year averages (Figure 1).

![Base 5 degree days from 1-Mar to 23-Apr ; 2002 to 2019](image)

**Figure 1**: Heating degree day accumulations for plant development (above 5°C) from March 1st to April 23rd for the past 17 seasons. Provided by Jeff Franklin (AAFC).

Heating degree day accumulation from March 1st through April 23rd:
- Approximately 35% more plant development heat units compared to the 5-year average, and 17% more compared to the 10-year average.
- Approximately 84% more plant development heat units compared to 2018, and 36% more compared with 2017.
- Approximately 43% more insect development heat units compared to the 5-year average, and 22% more compared to the 10-year average.

Soil Temperatures
Jeff Franklin, AAFC, reviewed data on the average daily soil temperatures for the years 2012 to 2019 at 50 cm depth. The data shows that in 2019 the ground froze to a depth of 50 cm and stayed consistently frozen from mid-February to early April. There was no insulation provided by snow. In most years the frost does not reach 50 cm in depth and if it does it is for a brief period of time.

Diseases
**Apple – Apple Scab**
Beginning at green tip, apple tissues are susceptible to infection from the fungus that causes apple scab, *Venturia inaequalis*. The environmental conditions for an infection are listed in the Modified Mills Table in the Supplement to the Orchard Outlook. Primary infections are caused by ascospores present in the leaf litter and infections develop on spur leaves, terminal shoots, and young fruitlets. If not controlled, primary infections will create spores that generate secondary infections for the rest of the season. The best approach to fruit protection is to control primary scab.

Notes on the week of April 20th:
- The Gadoury Ascospore Maturity Model estimates about 3.3% of the ascospores have matured as of April 23rd, assuming a green tip date of Saturday, April 20th.
- Erika Bent, APM, observed immature ascospores on Thursday and mature spores beginning on Friday. Some green tissue was present on Friday but most appeared on Saturday. Saturday afternoon was dry in the Valley followed by rain in the evening. Most green tissue would have been susceptible to
infection beginning Sunday evening. Warm days and nights led to mature spores, with about 1.5% maturing since Sunday, April 21st.

- I am experiencing a connection issue with the weather station that I use at the Kentville Research Station. I do not have leaf wetness sensor data to indicate the infection period but comments are based on observations and rainfall data from other weather stations in the Kentville area. The general agreement of the Orchard Outlook committee is to treat the wetting from April 21st to April 24th as one long infection period as no considerable drying has occurred since Sunday.
- Note: A relatively minor infection event might have occurred or was in the process of occurring when green tissue formed on Saturday but there was little if anything that growers could do for this event and the probability of infection was likely low if the spore load from last season was low.

Recommendations:

- This season’s first infection event has been complicated to say the least. With green tip happening around Saturday, April 20th, many did not have the opportunity to apply a protectant fungicide prior to the infection events and persistent rains. The main goal right now is to apply a protectant fungicide as soon as possible to provide coverage for the next predicted infection event on Saturday April 27th.
- The newer chemistries with post-infection activity need to dry and stick to tissue to be effective so a protectant like manzate (mancozeb) is recommended as tissue remains wet, if you haven’t applied a protectant yet.
- If weather conditions allow drying, consider a fungicide with post-infection activity including Scala, Inspire Super, Luna Tranquility or Syllit (tank mix with a group M for resistance management). Post-infection activity will work on only infections that occurred within the last 24-48 hours. This post-infection management technique is not normally encouraged but circumstances were not ideal this year.
- Reapply fungicide protection on a 7 day interval, with a shorter interval after wet weather (cumulative 1-2” rain) or rapid tissue growth.
- 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.
- If you plan to use oil for European Red Mite control, Captan should be avoided within 7-14 days of an oil application.

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. This strategy is most effective in blocks that had fire blight cankers in the previous two seasons.
Powdery Mildew
If you have a history of powdery mildew infections, start a management program at half-inch green to tight cluster. The pressure from overwintering infections might be high this year as many infections occurred during the warm weather last year. If pruning, continue to remove infected terminals.

Plum Varieties – Bacterial Spot

Recommendations:
- Cueva is the only product registered for use. Use a 0.5% to 2% solution, applied at 470-940L/ha. Re-apply using 5-10 day intervals. Apply as a dormant spray as buds begin to swell, repeating at the bud burst stage, and weekly thereafter as needed, up to six sprays.
- Plant disease-resistant varieties.

Replant Disease

Recommendations:
- If trees are not performing as you would expect, ask to have the issue confirmed.
- If trees show symptoms of nematode infestation, Vydate is currently the only chemical that is registered to provide control and it should be available for the 2020 growing season.
- Apple growers are advised to fumigate the soil before replanting an orchard.
- Destroy leftover roots from orchard crops as they harbour parasites and pathogens. Allow time for remaining roots to biodegrade.
- Plant new rows in old alleyways where a smaller population of replant disease organisms accumulated. Tighten tree spacing on a replant site as trees will be smaller and take longer to fill the space relative to trees on virgin land.
- Monitor the site’s drainage and make improvements such as tile drainage to reduce the frequency of soil saturation thereby reducing tree stress. Adding irrigation may also reduce tree stress, particularly on dwarfing rootstocks.
Crown Gall
Crown gall is a common issue of nurseries in ON and BC, causing at least 10% loss of nursery stock. As more nurseries are being planted in NS, growers should be aware of the signs because any infected material should be destroyed. There is also a higher incidence of crown gall in newly planted trees both locally and in other growing regions.

Crown gall, despite its name, appears on the roots or belowground stem of apple, pear, and stone fruit trees. The symptoms of this disease are tumours or ‘galls’ that develop as a result of infection by the bacteria Agrobacterium tumefaciens. The Agrobacterium alters the tree’s DNA to induce the overproduction of plant hormones – leading to the galls. The bacteria grow within the galls where nutrients are supplied by the plant, and eventually galls can girdle the stem.

Recommendations:
- Inspect trees before planting and pay attention to unusual growths. You may need to rinse the roots to clearly see if galls are attached. Take pictures and ask questions if you are unsure.
- Inspect trees from your own nurseries and destroy infected material.
- Preventing wounds is a good approach to prevent infection.
- In talking with Dr. Kari Peter, PSU, she observed that growers who had affected trees and fertilized them during the first year in the ground could compensate for the crown gall’s effect. Adequate nutrients and irrigation minimize tree stress to help the tree cope.

Figure 2: Monitor for signs of crown gall on root systems. Bottom photos by Paul Hildebrand.
Insects

European Red Mite
To be most effective, oil application for ERM should be targeted closer to egg hatch – around tight cluster and before pink. 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.

Pear Psylla
Feeding by pear psylla can cause reduced fruit size, russet and sooty blotch and may transmit pear decline phytoplasma and fire blight. The adults overwinter on the tree or the ground and emerge in the spring when temperatures reach 5-10°C. After mating, overwintering females lay eggs and most will hatch by petal fall.

Recommendations:

- A delayed dormant oil is recommended to discourage egg laying until insecticides can be applied during petal fall. It is not too late to apply dormant oil as there has not been much warm and sunny weather for egg laying. Oil application is recommended as soon as possible within the next week.
- Dormant oil will also reduce pear leaf blister mite.

Horticulture

Erosion and Frost Heaving
- Check new plantings for signs of erosion and frost heaving that have exposed root systems (Figure 2). Mitigate the damage by hilling up to cover root systems.

Pruning
- Ensure that youngest blocks are pruned first to ensure growth is directed into desirable leader and terminal extension. Mature blocks can be pruned later and are best when pruned prior to bloom.

Figure 3: Root systems of a young planting are exposed due to erosion. Photo by Joan Hebb.
Fertilizer
- Bud break to bloom is the ideal time for granular fertilizer application to maximize 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. Timely herbicide application will ensure you make the most of the weed free window.
- Residual herbicides such as Chateau, Alion, and others offer a much longer weed control period than post-emergent products such as Ignite, Gramoxone, and glyphosate. Chateau should not be applied after budbreak unless application equipment is shielded to prevent crop injury. Always follow label directions. Note that residual herbicides can damage single tree replacements.
- Weeds are now growing quickly and if residual herbicides cannot be applied soon, a contact herbicide may be needed anyway.

Events & Notices
2019 Nova Scotia Pesticide Certification Exam Schedule
The schedule is now posted on the Dept. of Environment website: https://www.novascotia.ca/nse/pests/docs/Pesticide-exam-schedule.pdf. Please contact any of the offices listed on the exam schedule to book a session when a proctor is available.

2019 Pest Management/Spray Guides
Hyperlinks to Tree Fruit Management Guides
Minor changes have been made this year with the addition of new products. Stay tuned for the “Supplement to the Orchard Outlook” that will outline all changes for 2019.

- Pome Fruit
- Stone Fruit
- Organic Apple

This Orchard Outlook has been published with the input of the Orchard Outlook Committee including Bill Craig, Danny Davison, Joan Hebb, Jeff Franklin, and Dr. Suzanne Blatt.

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