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Perennia has strict protocols to help lessen the spread of coronavirus, therefore I will not be conducting any farm or client site visits, apart from a limited amount of approved trial work. The newsletter this year is written in collaboration with people who are visiting farms. Please note that I am still available to respond to farm inquiries from commercial farms even though I am working from home. You can reach me by email at mcortens@perennia.ca or by mobile phone at 902-679-7908. For more information: www.perennia.ca/coronavirus

2020 Degree Day Accumulations

Degree day accumulations (base 5°C for plant development) from March 1st to April 27th show that 2020 is still below the 5- and 10-year averages (Figure 1). If the seasonal forecast is correct then we will gain some heat soon.

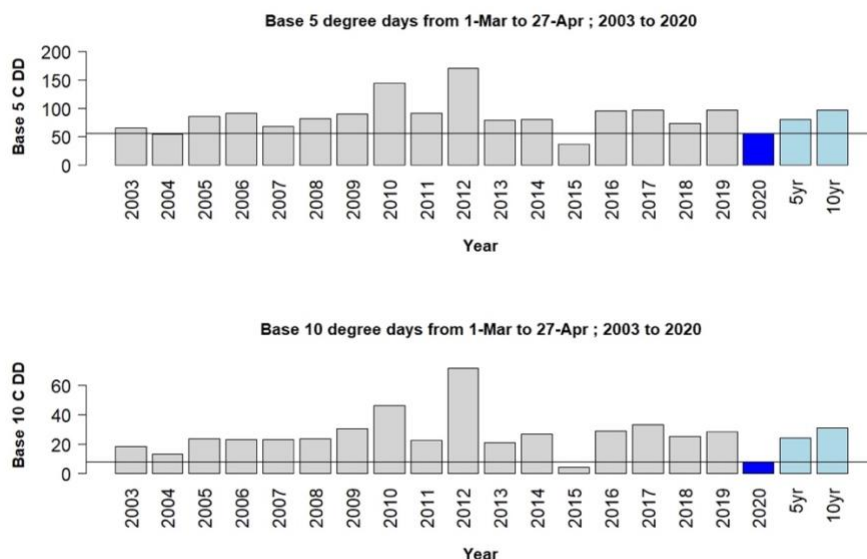


Figure 1: Heating degree day accumulations for plant (above 5°C) and insect (above 10°C) development from March 1st to April 27th for the past 17 seasons. Provided by Jeff Franklin (AAFC).

- Approximately 30% less plant development heat units compared to the 5-year average, and 42% less compared to the 10-year average.
- Approximately 42% less plant development heat units compared to 2019, and 24% less compared with 2018.
- Approximately 68% less insect development heat units compared to the 5-year average, and 75% less compared to the 10-year average.

Weather Notes

- Precipitation is still below average, but a few rainfall events are capable of bringing significant rain.
- The soil temperature rose to 7°C on the weekend but may have retreated in recent cold temperatures.
- After a frost, wait for frost to leave the plant tissues before running a sprayer through the orchard.

Bud Development

Location	Variety	Current Stage
Middle Dyke Rd, Kentville	Idared	Late green tip to ¼ inch green
	McIntosh	Green tip
Kentville Research and Development Centre	Gala	Late green tip to ¼ inch green
	Honeycrisp	Early green tip
	Pear	Swollen bud
	Sweet Cherry	Early swollen bud
Canard	McIntosh	Green tip
	Plums	Bud burst
Port Williams	Gravenstein	Green tip

Information courtesy of Erika Bent, Bill Craig, and Kim Hiltz on April 28-29, 2020.



Figure 2: Gala at green tip to ¼ inch green at KRDC by Kim (left). Honeycrisp at early green tip at KRDC by Michelle (Middle). McIntosh at green tip in Canard by Erika (Right).

Diseases

Apple – Scab

Table 1: Apple scab infection events at the Kentville Research Station from April 23rd to April 29th, based on the Modified Mills Table.

No.	Start of wetting	End of wetting	Infection period (hrs)	Average Temp (°C)	Rainfall (mm)	Type (Primary or Secondary)	Ascospore maturity*	Notes
1	Monday, April 27 at 12:30 AM	Wednesday, April 29 at 10:00 AM	52.5	2.8	33.7 (Wolfville 45)	Primary – Light Light = 41 hrs, moderate = 55 hrs, heavy = 68 hrs	1.5%	Wetting began in the dark, so ascospore release and the infection period started at 6:00 am sunrise.
Short Term Forecast**				Continue to reapply fungicide protection. Monitor the forecast for Friday, May 1 st and 2 nd . Ascospores are expected to mature to 3% by May 1 st .				

*Assuming a green tip date of Tuesday, April 21st. Please use this as a guide because microclimates will cause conditions to vary on individual farms.

** All forecasts are estimates. Observe forecasts daily for more accurate predictions.

Note: The environmental conditions for an apple scab infection are listed in the Modified Mills Table found in the [Supplement to the Orchard Outlook](#).

Recommendations:

- Rainfall happened prior to snowfall so rain caused ascospores to discharge from the leaf litter. Even though the rain turned to snow, infections were already developing. Snow kept the leaves wet and contributed to the leaf wetness period required for an infection event according to the modified Mills table.
- Significant rainfall is forecast for May 1st to 2nd. Reapply fungicide protection on a 7-day interval, with a shorter interval after wet weather (cumulative 1-2" rain) or rapid tissue growth.
- Always tank mix single site fungicides with a group M for resistance management. Scala cannot be used post-bloom and works best in cooler spring temperatures.
- 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.
- Note that the new captan containing product Maestro 80 WSP has re-entry periods that differ depending on the orchard density and activity (anywhere from 2-24 days).

Apple Scab FAQ

Contributed by Dr. Sajid Rehman, Plant Pathologist at Perennia

Q. What weather factors cause ascospores to mature in the spring?

A. Pseudothecia form about 4 weeks after leaves fall and they mature in late winter or early spring, culminating into asci and ascospores. Moisture acts as a catalyst in ascospore development and the optimum range for ascospore maturation is 16-18 °C. The beginning of ascospore maturity coincides with bud break.

Q. When are ascospores ejected?

A. During the early spring, when rainfall contacts the overwintered leaves on the orchard floor it causes the asci to be discharged forcibly. Sunlight activates the discharge mechanism so most spores are released during daylight hours. A temperature of less than 10 °C slows down ascospore release. The peak period of ascospore discharge is between the pink and the full-bloom stages of bud development.

Q. How far do ascospores travel?

After ascospores are discharged they are disseminated further by wind. Most spores travel a distance of only a few meters and stay within a block. But estimates say up to 10% of spores can be transported beyond the crop boundary and up to 200 m from the source. There is no question that apple scab is present throughout the leaf litter of local orchards – serving as many sources.

Q. Why does temperature and moisture relate to infection potential?

For an infection to occur, leaves must stay wet for the length of time it takes an ascospore to germinate and penetrate the leaf cuticle. Temperature will affect the rate of germination, so at warm temperatures the spore germinates quickly and can cause infection at relatively shorter duration of leaf wetness.

Q. How can apple scab infections happen in the summer after primary infections are done?

Following initial ascospore infection, conidia develop on the leaf surface as lesions. Conidia are the principal inoculum involved in disease buildup during the summer. They are disseminated by rain splashes and wind to

new leaves, fruits or twigs. The infection cycle by conidia can be repeated many times, known as secondary infections.

Apple – Fire Blight Prevention

Recommendations:

- **Post-tropical storm Dorian was a fire blight trauma event in early September 2019. Consider that you may have undiscovered fire blight infections in the orchard. A copper application this year is highly recommended as a precaution. There have been reports of fire blight following Dorian.**
- If you're short on operators, pick specific blocks for copper because it's time consuming to get good coverage.
- A copper application is recommended when buds have reached green tip. 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 product, which is why it is applied no earlier than green tip. If applied later than green tip, residues that persist on fruitlets can cause russetting.
- 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.

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. Avoid oil if freezing temperatures will occur within 48 hrs. This Wednesday night is expected to reach freezing temperatures.

Horticulture

Pruning

- Ensure that youngest blocks are pruned first to ensure growth is directed into desirable leader and terminal extension.
- Large thinning-out cuts will reduce the most bud load in the least amount of time.
- Mature blocks can be pruned later and are best when pruned prior to bloom. However, with the labour shortage this year summer pruning might be a good option to consider.

Planting & Nursery Trees

- Trees should not be planted in waterlogged soil. Newly planted trees should be pruned for tree structure and supported as early as possible after planting.
- For a high value crop like apple, always consider tile drainage. Evaluate the landscape for pooling water and poor plant growth to use the information when you arrange for tile drainage.
- Remember to **document the quality of your nursery trees** with pictures and notes. Did trees dry out? Any signs of disease (cankers, crown gall)? How do the roots look (rinse and take a photo)? Record the date of planting. An issue that shows up after planting is much easier to diagnose with this information.

Fertilizer

- Bud break to bloom is the ideal time for granular fertilizer application to maximize tree growth.

Lime

- Lime applied in spring works best when applied as soon as possible to get the product working in the top layer of soil. Surface applied lime will take a number of years to adjust pH of the soil profile so it is best to apply annually or biannually where needed. If soil testing for pH, measure during the same time each year as pH can change over the growing season. The provincial [limestone trucking assistance](#) program is open.

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 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.
- Use caution when applying Sandea to young trees and follow label directions.

Orchard Outlook Podcast - New Episode April 29th

E10 S1: Microscopic Meddlers Part 1 – Guest Keith Fuller



Keith Fuller is a soil research scientist with Agriculture and Agri-Food Canada based out of Nova Scotia. He is a familiar face in our local apple industry, fascinated with soil, and currently involved in a project on replant disease.

Keith describes why digging for facts is better than jumping to conclusions – because replant disease acts in concert with adverse soil properties. Learn how to modify the soil in a replant situation and have your questions answered about soil fumigation. You can listen wherever you get your podcasts or on our website: www.perennia.ca/learning/podcast

Events & Notices

First Time Pesticide Applicator Certificate - Online Exam Schedule Posted

If you need pesticide applicator certification between April 30 and June 30, please register for one of the on-line exam-writing sessions listed below by submitting an 'Application for Pesticide Certificate'. There are no fees for pesticide certification. This will be a revised single exam with 50 questions, instead of separate exams for Core and Category. Please review the Core and Category manuals before writing the exam. It is valid for only 1 year. View the schedule here: <https://www.novascotia.ca/nse/pests/docs/Pesticide-exam-schedule.pdf>

Renewal of pesticide certificate of qualification: If your pesticide certificate expires between December 1, 2019 and June 30, 2020, you can operate under it for an additional year without renewing. Many certified applicators choose to take education credits rather than write the pesticide exam, but there has been limited opportunity to do that since December, so this option is being offered instead. If you have any questions about how pesticide certification will work this year, please call your local Environment Office: <https://novascotia.ca/nse/dept/regional-office-locations.asp> or email ICE@novascotia.ca.

Support for Projects and Online Sales & Marketing

Rachel Brighton and Nicole Burkhard, Business Development Officers, are available for assistance with programs in the department and can link to external funding partners if you are considering projects in the future. Also if you are looking for help with business planning, please contact them at your convenience. Nicole is hosting a virtual 'Office Hours' session weekly every Wednesday from 10-11 am to answer your questions about online sales and marketing. If you want to join or make an appointment at a different time please contact Nicole.

- Rachel Brighton - Rachel.Brighton@novascotia.ca or 902-247-4350
- Nicole Burkhard – nicole.burkhard@novascotia.ca or 902-532-8775

Reminder: Hurricane Dorian Survey

The Nova Scotia Department of Agriculture invites you to fill out the following survey: *Hurricane Dorian Impact on Nova Scotia Agriculture on September 7-8, 2019*. The purpose of the survey is to examine the crop loss and extraordinary costs incurred as a direct result of Hurricane Dorian to Nova Scotia farms. It is important that **only** Hurricane Dorian related information is included in this survey. The intended respondents for this survey are Nova Scotia agricultural producers. If you have questions, please contact prm@novascotia.ca. The survey will take approximately 15-20 minutes to complete and can be filled out via the attached fillable PDF, or online at: <http://surveys.gov.ns.ca/TakeSurvey.aspx?SurveyID=882M5690>. The survey is open from April 10 to May 1, 2020.

Reminder: NSDA Animal and Plant Lab Samples

In response to the ongoing COVID-19 pandemic, the agri-food industry is recognized in Nova Scotia as an essential service. To ensure quality crop yields and environmental protection, the NSDA Animal and Plant Lab will be providing soil and water testing to Registered Farms during these critical times moving into the 2020 growing season. Please limit the number of samples submitted at one time to those required for this planting season so that we can prioritize our services.

Please Note: In order to follow public health orders to promote social distancing and minimize people in our buildings, all soil samples must be submitted to the lab using a courier service.

Samples must be shipped to:

Laboratory Services
176 College Road
Truro, NS B2N 2P3

For public health and safety reasons there will be a minimal number of staff on-site working and following social distancing protocols. For this reason, turnaround times may be delayed. Soil samples will be accepted effective April 6, 2020 with testing scheduled to begin the week of April 14, 2020. Please contact the laboratory with any questions: Email: LabServices@novascotia.ca or Phone: 902-893-6565.

Resources for Temporary Foreign Worker Employers during 14-day Self-Isolation

The NSFA has created a webpage to provide the relevant legislation, guidance documents and supporting resources for employers of Temporary Foreign Workers (TFWs) in Nova Scotia. There are federal and provincial requirements. It is essential that employers understand their responsibilities regarding TFWs. On this page there is contact information if you have questions. Visit <https://nsfa-fane.ca/covid-19/tfw/>

Farm Health & Safety from FSNS

Farm Safety Nova Scotia now has resources available in both English and Spanish to help manage the new working requirements for COVID-19. The resources range from a COVID-19 fact sheet, guidance for farmers to information graphics for workers on hand washing, how to protect themselves, how to stop the spread, and procedures if workers are showing signs and symptoms of the illness. To view the COVID-19 Resource page, visit <https://farmsafetyns.ca/covid-19/>.

2020 Pest Management/Spray Guides

Hyperlinks to Tree Fruit Management Guides

All changes new to the 2020 guides are in red text to make it clear to you what changes have been made. If you do not wish to have the red text in your copy, please print it in black and white.

- Download the [2020 Pome Fruit Schedule](#)
- Download the [2020 Organic Apple Schedule](#)
- Download the [2020 Stone Fruit Schedule](#)
- Download the [2020 Thinners and Growth Regulators Schedule](#)

This Orchard Outlook has been published with the input of the Orchard Outlook Committee including Shawkat Ali, Erika Bent, Suzanne Blatt, Bill Craig, Danny Davison, Jeff Franklin, Joan Hebb, Dale Hebb and Sajid Rehman.

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