ORCHARD OUTLOOK

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Please Note

Currently I am not conducting drop-in farm or site visits due to COVID.
Please contact me if you have a specific question or a concern and I can visit.

I will be off on the week of August 24-28. If your matter is urgent, please contact Kendra McClure at 902-300-3825. I will respond to all other requests after I return on Monday, August 31st.

2020 Degree Day Accumulations

This year there are reports of advanced fruit maturity. We do not have models to predict maturity based on degree days but in terms of base 5 degree days for plant development, Jeff Franklin reports that we are running 5 days ahead of the 5-year average.

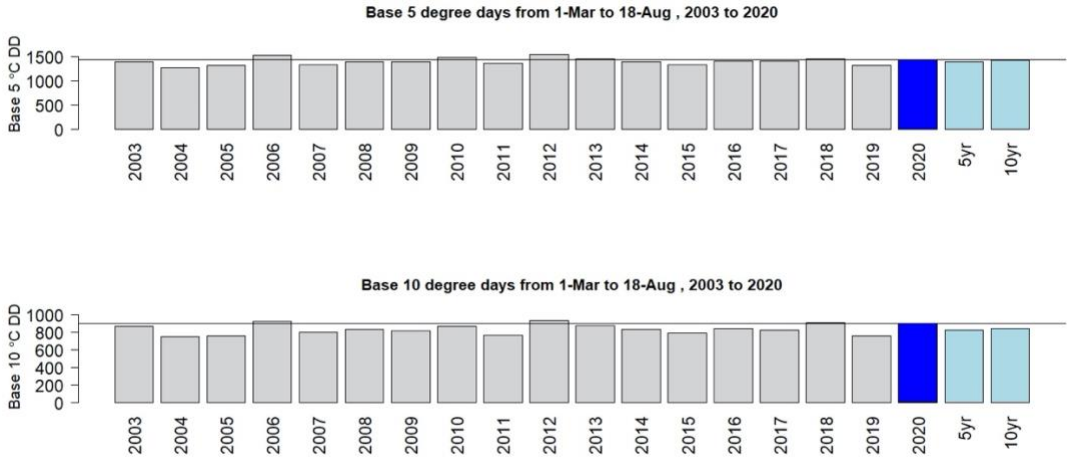

Figure 1: Heating degree day accumulations for plant (above 5°C) and insect (above 10°C) development from March 1st to Aug 18th for the past 17 seasons. Provided by Jeff Franklin (AAFC).

- 4% more plant development heat units compared to the 5-year average, and 2% more compared to the 10-year average
- 10% more plant development heat units compared to 2019, and 1% less compared to 2018
- 9% more insect development heat units compared to the 5-year average, and 7% more compared to the 10-year average

Horticulture

Heat Injury to Fruit Causes Indents

In a small number of cases, Honeycrisp fruit are showing signs of heat injury so I am including a note here to explain in case you are curious. Heat injury is an issue separate from sunburn although it can occur in conjunction. With heat injury, the tissue collapses and is indented (Figure 2). In cases where tissue damage occurs, fungi that cause rots like bitter rot might colonize the damaged tissues.

Figure 2: Heat injury in Honeycrisp where heat causes tissue collapse and indentations.

Quality Control Before and During Harvest

As harvest approaches, remember that the Orchard Tools app by Perennia has features to help you monitor fruit quality including blush colour and fruit size grade. Use it prior to harvest to help you decide which blocks to harvest first and if colour requirements have been met (Figure 3). Or sample fruit in the bin during harvest for quality control and provide feedback to your crew.

This tool is focused on efficiency – helping you input data digitally and analyze it quickly. And you can work without an internet or cellular connection as data is saved directly to your device. The app is available on the Apple Store for iPhones, iPods, and iPads.

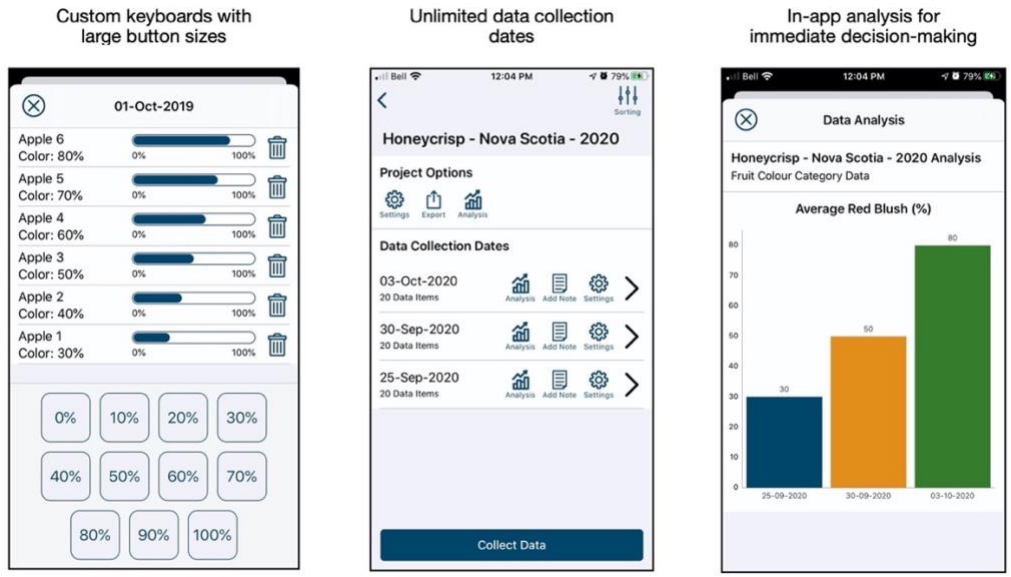

Figure 3: The Orchard Tools App by Perennia. Available on the Apple Store for iPhones, iPods, and compatible with iPads.

Nursery Practices: Chip budding, T-budding, and Sanitation

Chip Budding

This year I was hoping to create a local video on chip budding but it didn't pan out so I will revisit the idea in the future. Some of you might have found video resources online but if you have not, I would like to recommend the following videos with a few caveats. As always, use the videos in the context of your own experience and try the technique on a small scale first.

1. **Video: Easy summer chip bud grafting with Mark Albert, Fruit Tree Graft Demonstration (26:41)**
   This is a video of chip budding peach trees but the technique would be similar for apple trees. The dialogue between the presenters may offer some helpful tips.
   https://www.youtube.com/watch?v=niOQaNZKcPk

2. **Video: Grafting fruit trees | Summer budding of plums, peaches, apricots, kiwis and other fruit trees (15:00)**
   Again, this video is not for apple but the technique is clear and the video frame focuses on the buds. When the video goes on to explain maintenance and follow-up, note that they have a relatively longer

growing season so they are forcing the bud into growth immediately. That is unlike our practice of summer budding when buds stay dormant over winter and tops are cut next spring. https://www.youtube.com/watch?v=3lssseaG_Tg

Many of the tips in the videos are helpful but please note the following caveats:

- I recommend against cutting too deep into the rootstock. Make the cut at a 30- to 45-degree angle about one quarter of the way through the rootstock. Whichever angle you choose, make sure the same angle is used for the scion bud and that the vascular cambium lines up on at least one side.
- It is unnecessary to spray the cut with water. Water also introduces the risk of spreading disease if inoculum is present. Instead, work quickly to prevent the buds from drying out.
- Depending on the tape you use to hold the bud, monitor it as you may need to cut it to prevent girdling.

T-Budding

For t-budding, when the bark slips it signifies the time when the tree is in a period of active growth. The cambium cells divide and create new tissues that can be separated by lifting the bark from the wood. T-budding success depends on the bark slipping so poor growing conditions can limit success. For example, lack of water can interfere with growth, tighten the bark, and interfere with t-budding success. Even a slight resistance to bark slipping results in less bud take. For that reason, when moisture is limiting the bud take is enhanced by irrigating nursery rootstock prior to and after budding.

Sanitation in budwood collection, budding, and maintenance

Recommendations:

- Find a source of bud wood that does not have a history of fire blight strikes. Trees that have shown signs of fire blight strikes or that are situated near fire blight infections should be eliminated as a source of bud wood. Cut bud wood fresh every morning if possible.
- Occasionally sanitize all tools used for bud wood collection, storage, and budding by washing in detergent and water and disinfecting with sodium hypochlorite bleach.
- During bud wood collection and budding, frequently spray hand tools with fresh sodium hypochlorite bleach solution, diluted one part to nine of water.
- Monitor budded rootstocks in the spring for disease symptoms or poor growth. Remove trees with any signs of fire blight infections.

Events and Notices

Survey of Apple Summer Disease in Atlantic Canada

The Plant Pathology Lab of Kentville's Agriculture and Agri-Food Canada is looking for apple growers who will participate in a province-wide study of the fungal pathogens responsible for bitter rot and apple scab disease in apple. This is an industry and AAFC funded project.

Growers who notice either bitter rot or apple scab appearing in their orchard are invited to contact Dr. Shawkat Ali (shawkat.ali@canada.ca) or Shayne McLaughlin (mc615708@dal.ca). Researchers will then collect diseased isolates from the orchard for further study. Samples can be stored in the fridge for convenience. Samples cannot be collected from the orchard floor due to rapid deterioration.

Main Goal of the Study

Bitter rot is a fungal disease caused by multiple species within the *Colletotrichum acutatum* and *Colletotrichum gloeosporioides* sp. complexes (Figure 1). There are at least 34 and 38 known species in each of these complex. The species that cause Bitter Rot vary in pathogenicity and susceptibility to various fungicides. However, to our knowledge, no research to date has been conducted to determine the *Colletotrichum* species complex that are present in the Atlantic Canada. We hypothesize that several different species of *Colletotrichum* are responsible for Bitter rot on apples in Atlantic Canada, and that these species will differ in their fungicide sensitivity and virulence on different cultivars of apple. We are interested to see what are the species and isolates of these pathogens that are present in Atlantic Canada, and which species are more common than the others in the region.

We are also interested in the fungicides resistance profile of these species and isolates, to find out which fungicides are still effective while the others are not effective if the pathogens already have developed resistance to these groups of fungicides.

Additionally, we want to investigate if some isolates and species are more virulent than the other. Also, if some isolates are more virulent to some particular apple cultivars or to see if some cultivars are resistant to these pathogens.

On the completion of the study we will like to publish and share these results and information with the apple industry to better manage these diseases in Atlantic Canada.

Bitter Rot in Apple

While considered a post-harvest disease in the northern hemisphere, bitter rot infections occur in the orchard and symptoms often appear prior to harvest late in the growing season.

Symptoms: The characteristic symptom of Bitter Rot is the appearance of small, sunken lesions on the surface of the fruit, which gradually expand over time. When the lesions mature, they remain sunken and circular, and some spots may develop red halos. Late-stage infections will often appear to have a bullseye pattern (Figure 4). An internal "V" shape rot can be see in cross sections of infected fruit.

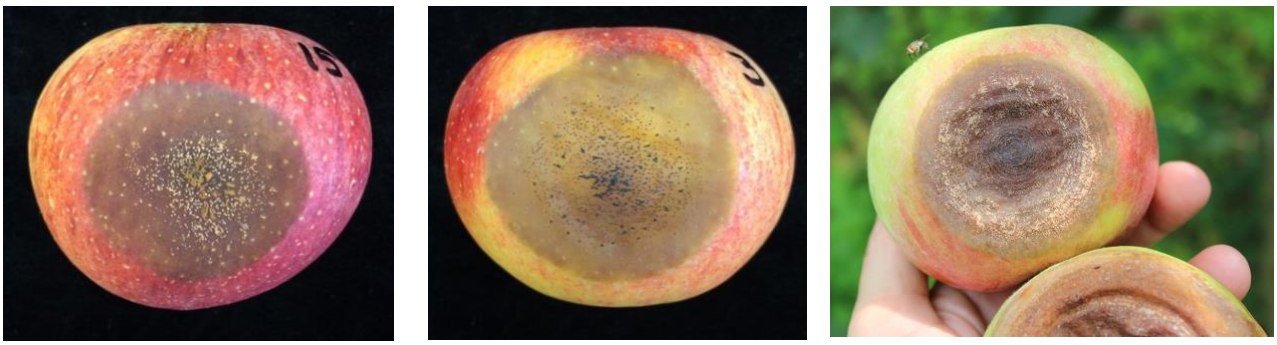

Figure 4: Species within the C. acutatum complex produce orange conidial (spore) masses during wet conditions (left), while C. gloeosporioides complex species develop black acervuli (fruiting structures) and no orange conidial masses (right). (Photos by Kimberly Leonberger et al.)

Apple Scab

Likewise, the fungi responsible for apple scab can vary greatly in fungicide sensitivity and pathogenicity. This project aims to characterize the populations of these pathogens present in Nova Scotia and to investigate their sensitives to commonly used fungicides, as well as their individual aggressiveness in order to better inform management strategies for these pathogens.

Symptoms: Well known to growers, apple scab infections can occur both on apple leaves and fruit, resulting in the characteristic velvety lesions that give the disease its name.

NSFGA Virtual Summer Tour with your host from Perennia, Michelle Cortens

This year Perennia's Tree Fruit Specialist hosted the first ever virtual tour for the Nova Scotia Fruit Growers' Association. On the week of August 10th, a series of nine videos were released daily. The videos are now all available on the YouTube NSFGA Summer Tour playlist to view at any time. Buckle up and take a passenger side seat with Michelle as you explore topics such as rootstock trials, new plantings, apple replant disease, a grower panel discussion, fruitlet thinning, organic production, and entomology research.

Perennia's Virtual Field Days

Join Perennia horticulturists at noon on September 8, 9 and 10 for Perennia's Virtual Field Days. This is your chance to see what's happening in the field, chat with guest speakers and connect with others. Videos will be recorded and available at a later date.

Program Deadlines:

Submit applications to Programs and Business Risk Management by their program-specific deadlines.

- Agriculture On-Farm Student Bursary Program: Opens September 1
- Limestone Trucking Assistance Program Application: September 1
- Market Expansion and Export Readiness Program Application: September 30
- Small Farm Acceleration Program, Phase 1 Application: September 1
- Spring 2020 Soil & Water Program Claim Deadline: September 1
- Fall 2020 Soil& Water Program Claim Deadline: September 15

Agriculture On-Farm Student Bursary Program

Are you entering or returning to post-secondary education in September? Have you spent your summer working on a registered Nova Scotia farm? Take a look at the Agriculture On-Farm Student Bursary that opens September 1st.

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 Guide
- Download the 2020 Organic Apple Guide
- Download the 2020 Stone Fruit Guide
- Download the 2020 Thinners and Growth Regulators Guide
- Download the 2020 Tree Fruit Weed Management Guide

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