2019

ORCHARD OUTLOOK

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2019 Degree Day Accumulations

Currently, we have accumulated an estimated 8 degree days fewer than the 10 year average based on the 5°C degree-day total. Accumulation of degree days above base 10°C is 10 days fewer than the 10-year average. Monitor the fruit maturity of your blocks closely as this difference in degree days may not directly translate to a change in harvest dates.

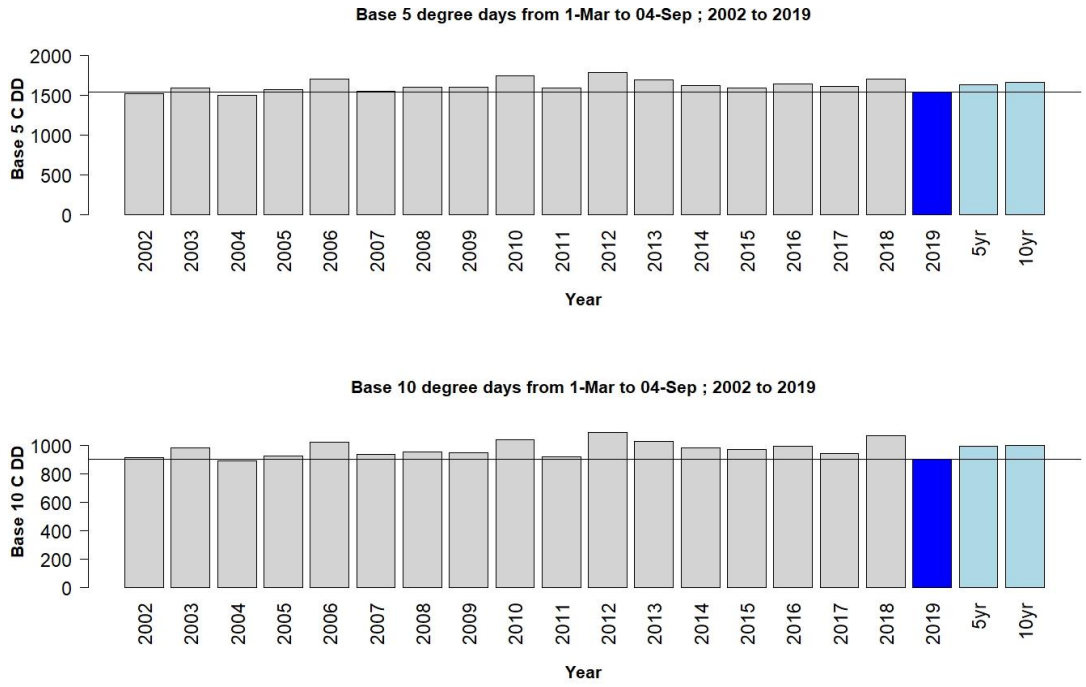

Figure 1: Heating degree day accumulations for plant (above 5°C) and insect (above 10°C) development from March 1st to Sept 4th for the past 17 seasons. Provided by Jeff Franklin (AAFC).

Heating degree day accumulation from March 1st through Sept 4th:

- Approximately 6% less plant development heat units compared to the 5-year average, and 7% less compared to the 10-year average.
- Approximately 9% less plant development heat units compared to 2018, and 4% less compared with 2017.
- Approximately 9% less insect development heat units compared to the 5-year average, and 10% less compared to the 10-year average.

Diseases

Apple Storage/Pinpoint Scab

Pinpoint scab results from infections that occur late in the growing season. Small black dots appear as infections on the skin of the apple. In some cases, the fruit infections don't appear until after the fruit has been placed in storage, however, the infections do occur prior to harvest.

Recommendations:

- Heavy rain in areas of the Valley on Thursday, August 29th would have washed off fungicide protection.
- Fungicide protection maintained through early September can help to prevent these late season scab infections and provide some protection against storage rots.
- A fungicide treatment at this time of the growing season would be highly recommended in blocks that have leaf and/or fruit scab. Scab lesions that appear to be inactive at this time of the year can become active again in the fall under cool wet weather conditions.
- When selecting a fungicide, days to harvest must be taken into consideration. Maestro/Captan has a 7 day pre-harvest interval and also has activity against storage rot.

Apple Storage Rots and Fungi

A well-timed preharvest chemical control can go a long way to prevent storage rots. Black rot, flyspeck, sooty blotch and brooks spot are preharvest issues that can infect fruit in the orchard. Fungal spores that land on unprotected fruit can germinate and show up as infections in storage. Fruit with bruises and punctures are even more susceptible to rot, especially when fruit are harvested during a wet period. Blue and gray moulds can invade only damaged fruit. Sooty blotch won't cause decay but it does shorten fruit storage life by increasing water loss.

Recommendations:

- Monitor precipitation during harvest, especially for late-season varieties. Cumulative rainfall of 25-50 mm washes off fungicide protection.
- Pristine fungicide has a 5-day preharvest interval and is labelled for the control of scab, black rot, flyspeck, sooty blotch and brooks spot. The short PHI and good activity are especially helpful for protecting apples being placed in long-term storage.
- Of course, avoid bruising or wounding to prevent infections of blue and gray moulds. Take the time to educate staff on the proper way to perform harvest activities.
- Fruit damage from hail or wind makes fruit more susceptible to storage rot. Maintain fungicide protection to the end of the season.

Harvest Fruit Quality

Summer Pruning for Red Colour

Vigorous shoot growth in orchards could present a fruit shading problem. Summer pruning could be used to expose the fruit to more sunlight to improve fruit colour.

Recommendations:

- Summer pruning should be a very simple process restricting the majority of pruning cuts to one- and two-year old wood. Concentrate on the upright shoot growth in the shoulder area of the tree and on the bottom scaffold limbs.
- Leave the weaker side laterals to supply the fruit with carbohydrates. If you over prune you could end up reducing fruit size.
- Avoid leaving short stubs as they will produce two or more shoots next spring.

Reducing Bruising

Recommendations:

- Apples picked after significant rain will bruise more easily than if they're picked when the soil has a lower moisture capacity.
- Let fruit warm up before harvesting. Apples picked in the cool weather of early morning bruise more easily than those picked in the day's warmth. Generally, susceptibility to bruising decreases gradually from 0 to 15°C.
- Take the time to educate staff about the proper way to perform harvest activities that reduce bruising. For example, pick the bottom of the tree first, don't overfill the picking bag, avoid long harnesses that let the bag bump against knees when walking, explain the difference between varieties etc.
- Heavy rain last week created gullies and rough roads. Re-grade orchard roads prior to harvest to lessen bumps that would jostle fruit being transported in bins.
- Have an inspector sample fruit from various positions in the bin two times each week and leave at room temperature for 24 hours to check for signs of bruise development.
- If bins of fruit will sit in the orchard during overnight freezing temperatures, place the bins where they will be shaded from direct morning sun. Direct sun will warm the fruit too quickly and can lead to deep and lasting bruises.

Considering Watercore

Watercore is a fruit disorder closely associated with over-mature apples along with several other factors. It happens most frequently in years with high sunshine and lack of cloudy, rainy days. Also, highly coloured and large fruit are most prone to the disorder. Fruit with the disorder have an appearance of water-soaked flesh because the spaces between the cells become concentrated with sugars instead of air. Small signs of watercore can disappear in storage and add sweetness to fruit. However, more serious watercore can reduce gas exchange in the fruit and lead to internal breakdown.

Recommendations:

- Mature fruit are more likely to develop the disorder because as fruit mature the starches are converted to sugars. The sugar solution builds up in the fruit.
- Harvest blocks with a history of watercore before other blocks.

Avoiding Internal Browning

Internal browning is likely related to carbon dioxide injury. The disorder frequently occurs in overmature and large fruit that have high carbon dioxide concentrations. In particular, fruit harvested late in the harvest window are most susceptible because as fruit mature their ability to diffuse internal carbon dioxide concentrations decreases. The internal carbon dioxide builds up and increases the chance of injury.

Harvesting too Early

While trying to avoid overmature fruit, avoid the other extreme as well – immature fruit. Picking fruit too early has penalties. Fruit continue to grow as they mature so a 1/4 inch increase in size from 2 3/8 to 2 5/8 can translate into a 35% increase in fruit volume. It takes just as long to pick one large (88 count) apple as it does to pick one small apple (160 count). But it will take half as long to make up a bushel of large apples than small. So picking cost and time required are less for larger fruit. Picking too early can also sacrifice fruit colour and reduce pack out. Immature fruit bruises easily and is subject to scald, shriveling in storage, and poor flavour.

Harvest Management Tools – Harvista and Retain

ReTain's active ingredient (aviglycine hydrochloride) inhibits the production of ethylene in plant tissues, delaying fruit maturity and preventing fruit drop.

Recommendations:

- Note that the amount of ethylene produced differs by apple variety and so the variety's response to ReTain will also differ. McIntosh is a high ethylene producing variety and the full rate is often needed 3 weeks before harvest to slow its maturity. Sensitive varieties like Gala, Jonagold and Honeycrisp produce low ethylene and are more sensitive and thus severely delayed by ReTain.
- Consider testing ReTain or Harvista on a small block before widescale use as we do not yet have much local information on these products.
- The effectiveness of ReTain is dose-dependent and time-dependent. Later applications and smaller doses have less effect on maturity and colour development.
- ReTain applied 3-4 weeks before harvest will delay the harvest period up to 7 to 10 days.
- Xiameter surfactant is recommended at a concentration of 0.05 to 0.1% (v/v) in the spray tank. To prevent possible spotting on fruit, use the 0.05% (v/v) concentration when high temperature (in excess of 30° C) is anticipated.

Harvista (1-methylcyclopropene) is another product for preharvest management that was recently registered in 2017. The mode of action is different from Retain because Harvista blocks ethylene action in fruit, even after ethylene has been produced. Therefore, Harvista can act quickly to slow maturity whereas ReTain requires a timely application to fruit before ethylene escalates.

Recommendations:

- A customized sprayer system is required for Harvista applications.
- Harvista can be applied 3 to 21 days before the anticipated harvest and at a higher rate for fruit that are more advanced in maturity.
- Lower rates are recommended for biocoloured apple varieties to allow colour development to progress.

Horticulture

Hurricane Dorian Preparedness

There is currently a chance that Atlantic Canada may be affected by the remnants of Hurricane Dorian. Predictions are still in the distant future, but the storm may arrive this weekend as either a Category One hurricane or a strong tropical storm. Environment Canada has issued an alert and you can stay up to date with the current forecast on the Environment Canada Hurricane Track website.

Recommendations:

- Young trees can break in high winds if they have not been tied to support systems. Train young trees as quickly as possible before the storm is expected.
- Have streptomycin available to treat orchards within 24 hours of exhibiting damage to foliage or limbs – prioritize young trees and nurseries.
- Ensure that equipment is accessible if it will be needed for recovery, including saws, shovels, fuel, equipment parts, and knowledge of the location and cost of other equipment.

Preparing for Fumigation

Sites that will be fumigated early this fall need to have the soil prepared to where it is in a seed bed condition. A poorly prepared site could result in the fumigant being ineffective. This means that there should be no large clumps of soil or vegetative matter that will hinder the sealing of the soil surface. Preferably, the fumigation strip should also be deep ripped to bring up roots or stones that may damage the fumigator.

Honeycrisp Leaf Chlorosis

Leaves start out chlorotic and by the end of the season they turn brown and dry. The symptoms commonly form on the edges of the leaf and progress inwards. Not to worry though, this genetic trait of Honeycrisp shows up at the end of every season, and severe symptoms do not appear to negatively affect the health of the trees.

It's tempting to think the discolouration is related to a nutrient deficiency because the resemblance is strikingly similar, but the scientific consensus is that a nutrient deficiency is not involved. Honeycrisp leaves become discoloured when export of carbohydrates from the leaf becomes partially disabled. Carbohydrates accumulate and interfere with chloroplast function. As a result, the chloroplasts break down and the green pigment is lost.

Symptoms tend to appear after shoot growth is complete. Growing points like shoot tips, and storage organs like roots and fruit all attract carbohydrates for their own use. When shoot tips stop growing, there is less demand for carbohydrates… allowing it to accumulate to excess levels in Honeycrisp leaves.

Events & Notices

Industry Demonstration Morning presented by Horticulture Nova Scotia

Cover crops with Sonny Murray of Perennia, various non-herbicide weed control equipment with Greg Gerrits of Elmridge Farm, solar power on the farm with Matt Eye of M.B. Eye Electrical, and R2Weed2 Robotic Weeder with Teric Greenan, Nexus Robotics (taking place about 1 km down the road). **Thursday, September 5,** 9 – 12 AM, Elmridge Farm, 765 Bains Road, Centreville.

Limestone Trucking Assistance Fall Intake Deadline

The Limestone trucking assistance program aims to help Nova Scotia farms defray the cost of trucking limestone to give equal opportunity neutralizing the acidity of the soil on agricultural land and improve production efficiencies. Complete the Limestone Trucking Application Form and submit to the Programs and Business Risk Management office with your current soil analysis or Nutrient Management Plan lime program. The fall intake deadline is October 15th.

Agriculture On-Farm Student Bursary Program

Agriculture On-Farm Student Bursary Program opens for applications on September 1st. The bursary program helps introduce Nova Scotia students to careers in agriculture and develop skills and knowledge to work in this field. Students who worked a minimum of 250 hours may be eligible for a bursary of $500. Students who worked for a minimum of 500 hours may be eligible for a bursary of $1,000. For more information about the program, read the Program Guidelines.

Fall 2019 Pesticide Applicator Training by Marbicon Inc.

Two-day courses are available to prepare you for writing the provincial certification examination. The provincial exam MAY be given on the second day of the course only if there is sufficient registration. Otherwise you must register for the nearest exam on the date most convenient to you. Five Continuing Education points (T1669) are available to currently certified applicators who attend the first day of this two-day course. This is the same course as was offered last spring. You may only take these points (T1669) once.

Oct 7-8 Truro: Douglas Street Rec Centre (exam in Bedford Oct 9)

Nov 4-5 Berwick: Berwick Fire Hall (aiming for exams at Bedford Nov 7, Kentville Nov 13, and/or Truro Nov 21).

Be advised that taking a course is NOT required before writing the exam, but most people find it helpful. Non-certified agricultural applicators working under the supervision of a certified applicator may attend the first day and receive a signed certificate of attendance. For all courses, registration starts at 8:30 am with up around 4:30 pm. Lunch & breaks on your own. A manual is provided. Bring a pen and calculator. All 1-day registrations (5 points) are $95 (taxes included). Bring your certification card. All 2-day courses are $175 (taxes included). The course fee is payable at the door; cash or cheque (or e-transfer) payable to Marbicon Inc. The provincial exam is an extra fee payable to the province. For further information or to pre-register, contact Jim Jotcham at marbicon@eastlink.ca or (902) 538-7101.

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