

2021 Ontario, Canada Season Highlights –Apples, Tender Fruit, Berries

Person(s) Reporting:

Kristy Grigg-McGuffin, Erika DeBrouwer, Wendy McFadden-Smith,
Kathryn Carter, Erica Pate
Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)



MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS

General Weather Conditions

Generally speaking, temperatures in early fall 2020 followed the 5-year average but were milder November 2020 through January 2021 (Figure 1). Other than a cold snap in February, Ontario experienced a very mild spring similar to 2012 where 80% of Ontario apple crop was lost to frost.

Unfortunately, multiple frost events did hit across the province in April and early May, including a final snow and frost the last weekend in May. Some berry growers irrigated for frost protection numerous nights in a row. Frost fans ran frequently in orchards during that time; however, there were some nights where winds were too strong in some regions.

The cool and slow start to the season quickly changed to a hot and dry summer. Rainfall was 40-60% of the normal precipitation until July for most of Ontario's fruit-growing areas (Figure 2). Eastern Ontario was hardest hit with little to no effective precipitation for the season. In the southwestern regions of the province, torrential rains experienced mid- to late summer lead to municipalities declaring State-of-Emergency for flooding and fields with standing water requiring pumps.

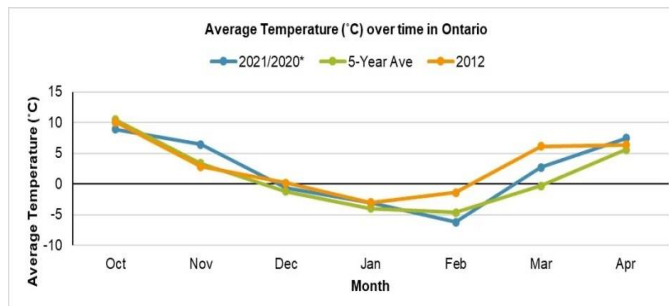


Figure 1. Average fall, winter and spring temperatures (°C) of apple growing regions in Ontario over multiple years. *2021/2020 season consists of October through December 2020 and January through April 2021. Source: Erika DeBrouwer, OMAFRA

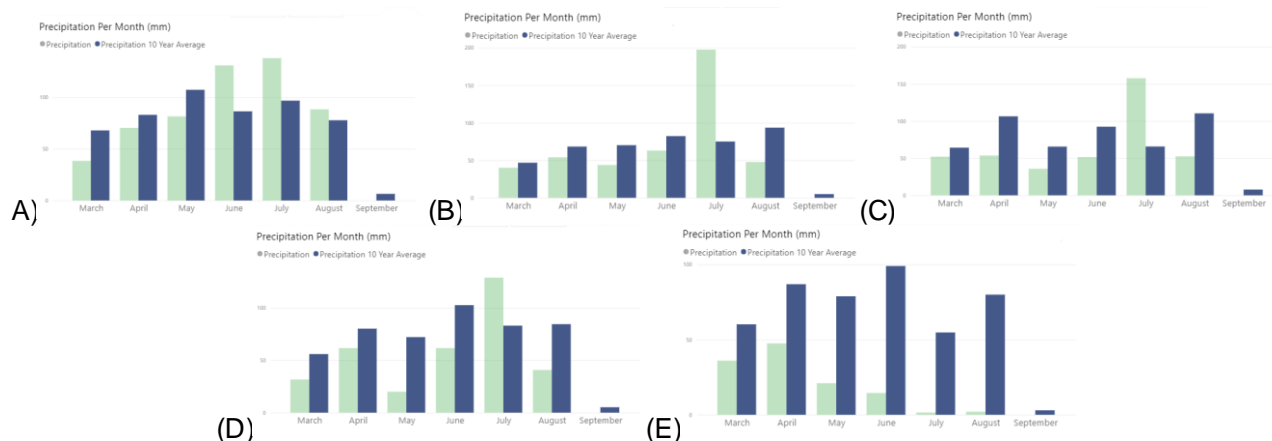


Figure 2. Monthly precipitation (mm) for key apple-growing regions in Ontario (southwest to eastern regions): (A) Essex, (B) Simcoe, (C) Bruce, (D) Durham and (E) Trenton, March – August 2021

Extreme heat and humidity late summer brought unsettled weather to several regions of the province which included hailstorms. While damage was sporadic, some growers wrote off their crops from the season.

The unseasonably warm days and nights have continued through the fall.

Horticulture Overview

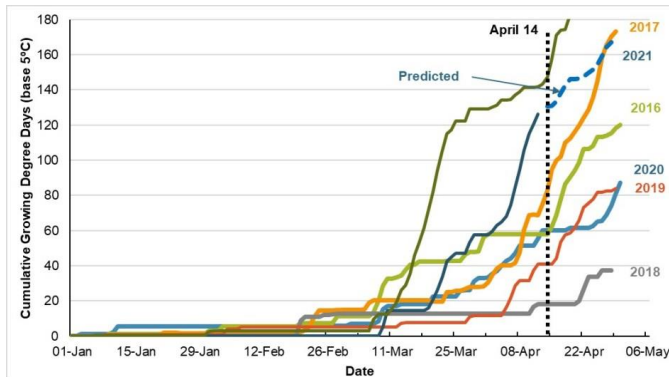


Figure 3. Heat accumulation from Jan 1 – April 30 at the Simcoe Research Station, as expressed as cumulative growing degree days (base 5°C) for the 2012, 2016 – 2021 growing seasons. The data from April 14 – 30, 2021 (dashed line) has been estimated based predicted daily minimum and maximum temperatures. Source: John Cline, University of Guelph

The mild spring brought an early start to the year with bud break for both tree fruit and berries 7-10 days ahead of normal. Growing degree days accumulated rapidly (Figure 3).

Earliest apple-growing regions began bloom the last week of April, while later regions saw bloom start mid-May. The cool spell during this time resulted in a long, drawn out bloom for some areas and slowed down growth.

The hot temperatures and low soil moisture caused variability in fruit size for both apples and tender fruit. However, apple yield has been estimated to be 80-85% of the 5-year average and fruit is sweeter than normal.

Despite the cold spring, there was minimal frost injury to peaches and nectarines. Apricots were harder hit by the frost and had significantly lower yields. Berry

growers in Eastern Ontario had significant frost damage to their early strawberry varieties, and some day-neutral growers lost their first flush of over-wintered strawberries.

There was some level of blossom injury in apples given their growth stage (tight cluster to petal fall) at the time of the spring frost events. Most significant damage was to king blooms which resulted in asynchronous bloom. This, along with cool temperatures, made for a challenging chemical thinning period. The Georgian Bay region and east of Toronto to Ottawa experienced frost and snow during early fruit set. This resulted in fruit abortion, cracking and discoloration for some growers in these regions.

Skin finish issues arose in tree fruit late season. Temperatures were hot enough to cause sunburn in July and August as well as create issues with soft fruit during periods of tender fruit harvest.

Apple maturity has been 10-14 days early for most varieties with late season harvest still on-going. With the warm night temperatures continuing to date, colour has been an issue. Fruit with watercore and waxy skin are going into storage as a result of over-maturity.

Market Conditions, COVID Impacts

On a positive note, Pick-Your-Own operations have had a very successful year. Despite requirements for increased safety measures and reduced crowds at a given time, growers enjoyed an increased demand.

Interest in tabletop (or soilless) strawberries and long-cane raspberries is growing with more of these systems being established or expanded in Ontario.

Access to labour was the most significant impact to the Ontario horticulture sector this year. Most operations in the province participate in the Seasonal Agricultural Worker Program, which experienced significant travel restrictions for workers from many countries such as Mexico, Trinidad & Tobago and Jamaica. In addition to the reduced labour force, a federally mandated paid 14-day quarantine period was required for all workers coming into the province, with required testing on day 10. Safety measures and social distancing requirements within bunkhouses for both the quarantine period and remainder of the season were also issued by municipalities. Delays caused issues ranging from planting, pruning, tree training to harvest. Growers had to adapt to the reduced labour by relying more in-season on chemical thinning, plant growth regulators or use of string thinners in peaches.

Pest Management Overview - Disease

With an early start to the season, multiple **apple scab** sprays were already on by the end of April which is generally when management usually starts in the province. However, with dry weather beginning in May, very few orchards saw scab escapes this year. In general, pressure was very low across the province.

A summary of **fire blight** infection risk from April 16 to June 7, 2021 is now posted on <http://onfruit.ca/fire-blight-map/>. In the earliest regions of the province, apple bloom began late April, whereas the later regions did not reach bloom until mid-May. With the cooler weather extending bloom, most regions across the province saw secondary bloom well into June. According to the forecasting model, high to extreme infection potential occurred daily from May 15 until May 28 and increasing again into June. Blossom blight was apparent in those blocks with unmanaged secondary bloom. With the high humidity, winds and sudden storms through the season, shoot blight spread quickly in many blocks. Rootstock fire blight continues to be an on-going issue each year for growers. Tree collapse from fire blight in several orchards was reported from mid- to late summer.

The mild winter followed by a dry early season created a perfect storm for **powdery mildew**, which started very early. Those growers that relaxed spray intervals because of the low scab pressure soon found themselves chasing mildew.

Fruit rot (black rot, bitter rot) continue to be an increasing problem in apples in the province, mainly in Ambrosia, Gala, Empire, McIntosh, Honeycrisp and Golden Delicious. Hot, humid weather followed by thunderstorms in the late summer made for ideal infection conditions for bitter rot. Heavy rains frequently removed residue. Growers are concerned about the potential loss from fruit rot coming out of storage as a similar situation occurred in 2018/2019.

Sudden/rapid apple decline continues to be an issue in the province. Trees around the age of 5-8 years, Gala/M9 remains the most susceptible with this issue; however, collapse on other cultivars such as Ambrosia and rootstock such as M26 have been reported. In Ontario, **Phomopsis canker** at the graft union is still very common with suspected SAD/RAD cases. Fire blight issues are also confounding this. Sudden tree collapse has also been observed in tender fruit and hazelnut.

Since the onset of SAD/RAD, virus detection in apples has increased. Preliminary survey in March 2021 of 40 randomly selected dormant Ambrosia trees from 10 orchards across the province determined the presence of **apple chlorotic leaf spot virus** (65%), **apple stem pitting virus** (52.5%) and **apple mosaic virus** (20%). All detections were in M9 rootstock. Virus was not detected in alternative rootstock. Ontario does not currently have a clean plant network for apple nursery stock.

The light fruit crop and dramatic shift at bloom from cool to warm, humidity followed by heavy rains has favoured the development of **moldy core** in apple varieties such as Red Delicious and Idared. This has resulted in premature ripening in some blocks.

In stone fruit, very little disease was present as a result of the relatively dry season in the growing regions.

The rainy late season added disease pressure to berry crops. **Anthraxnose** pressure was high in day-neutral strawberries – this combined with the limited chemical control options made for a challenging year managing this disease in particular.

Neopestalotiopsis sp. of strawberries was first identified in the fall of 2020 in Ontario. OMAFRA surveyed for this disease in 2021 and will continue in 2022.

The horticulture industry is very concerned about the recent re-evaluation decisions for a significant number of key protection materials including numerous Group M fungicides. At the end of this year, **thiram, ziram, ferbam and metiram** are cancelled. Significant use restrictions have been put in place for **captan**, for example a maximum of only 2 applications for any apple orchard with a canopy width >2m (maximum 10 applications for width <2m) and a restricted entry interval of 24 days for hand thinning and 19 days for hand harvest. The latest decision to be released was for **mancozeb**. After the 2022 season, apple growers will see a decrease of allowable applications to 4, restricted entry of 35 days for hand thinning and a preharvest interval of 77 days

(previously 45 days). The loss of Group M fungicides leaves horticulture growers with very little pest and resistance management strategies remaining.

Pest Management Overview - Insects

The mild winter may have contributed to the early and high populations of **aphids** in most crops across the province. In apples, rosy apple aphid pressure was very high this year, resulting in fruit deformities. Black cherry aphid was more of a problem than usual in all stone fruit. Unfortunately, beneficial insect activity was not as quick so growers did not see this assistance until late spring when populations increased.

Potato leafhopper continues to be seen earlier and in higher numbers over recent years. Many tree fruit blocks are now actively managing leafhopper yearly, especially in young orchards.

Weather conditions also promoted higher mite populations, including **two-spotted spider mite** and **rust mite** in tree fruit and **cyclamen mite** in June-bearing strawberry. Cyclamen mites remain a challenge for strawberry growers with only one miticide registered for control (Agri-mek).

Increasing scale problems such as **San Jose scale**, **oystershell scale** and **lecanium scale** continue to be identified in tree fruit. Loss of broad-spectrum products in last decade and fewer growers using dormant oil are likely contributing to this. With the reduction of captan use, more apple growers are incorporating summer oil into their programs.

Plum curculio emergence was delayed in some areas as a result of the dry weather; however, the tender fruit region (Niagara) saw more rain in early June so had a faster emergence of this pest. Low levels of plum curculio damage has been found.

Mullein bug activity increased quickly over the extended bloom period which had some growers concerned, especially those that experienced delays removing honeybees. Fruit damage was reported in several regions. Product of choice is often Calypso; however, growers find this can have inconsistent efficacy from year to year.

Lymantia dispar dispar (LDD) populations were in peak cycle this year. Provincial surveys saw an increase in defoliation caused by LDD increased from 586,000 hectares in 2020 to almost 1.8 million hectares in 2021. While damage was extensive in some apple blocks and blueberry fields, hazelnuts were found to be a preferred host.

Numerous summer pests, such as **codling moth**, **oriental fruit moth** and **obliquebanded leafroller** had long, extended generations likely due to the extreme temperatures. Multiple sprays were required for control and many growers found they needed longer residual pressure than even the hardest products could offer. Late season activity continued well into harvest with preharvest damage observed. The frequent rains also resulted in fairly continuous **apple maggot** activity, with some regions experiencing high pressure this year.

Psylla pressure was constant throughout the growing season. **Blister mite** was a problem in pear in some orchards.

Apple leafcurling midge populations continue to build in regions across the province. Trap catch numbers rose very quickly this year and remained high well into the fall. In established orchards, infestations of up to 60-75% of shoots have been observed and some growers believe this pest is affecting yield. Mullein bug and Orius continue to be significant predators of leafcurling midge larvae throughout the season. Regional degree day models have been developed for Canada.

Spotted wing drosophila continues to plague berry and cherry growers.

Sporadic pests worth noting this year include **stink bug** and **Japanese beetle** activity as well as high populations of **earwigs**.

Also of concern for raspberry and blueberry growers, this was the last season growers could use **Admire** for white grubs, leaving no alternative for control.