

## The March of Spring

Dr. John A. Cline, Pomologist and Tree Fruit Physiologist  
Ontario Agricultural College, Dept. of Plant Agriculture, University of Guelph,  
Horticultural Experiment Station, Simcoe

~

*Everybody talks about the weather, but nobody does anything about it.* (Mark Twain)

~

Everyone loves to talk about the weather. Arguably, agricultural producers are most vocal when it comes to weather, because it affects their very livelihood. On February 2nd, Ontario's prognosticating rodent, Wiarthon Willie, forecasted an early spring. In early and mid March, this forecast seemed to be holding. Some may be asking how this spring is shaping up, but others may ask why this matters. While the warm weather is a delight to many, early warm temperatures are a harbinger of spring frosts -- and potential crop losses.

While the SARS-CoV-2 virus hasn't affected the weather, it has raised immense grower concern regarding the availability of labour through The Seasonal Agricultural Worker Program to plant and manage crops. Producers of apples and tender fruit are particularly affected, because if their current order of trees cannot be planted, or established orchards cannot be properly managed, it will have a profound effect this year's crop and lasting effect on the crops in years to come.

The objective of this article is to investigate and interpret the weather data this spring (up to April 3, the time of writing) at the Simcoe Research Station to predict how the heat accumulation this season compares with recent past springs. To do this, it is important to explain my methodology.

### Growing Degree Days

Plants develop and grow in response to the temperature of their environment. Many meteorological elements influence the well-being of a plant, but temperature is the single most important factor contributing to plant response. Because of this, and because information on air temperatures is readily available, plant develop can be fairly accurately estimated using heat units -- expressed as growing degree days. The concept assumes that each plant has its own particular base or threshold temperature below which growth does not occur, much like insects. For fruit trees, 5°C is widely used as the base temperature. The amount of heat accumulated during the day can be obtained by simply subtracting the plant's base temperature from the mean temperature for the day, and is referred to as *growing degree-day* accumulation.

### Results

As of April 4, 2020, 39 growing degree days (GDD) have been accumulated (as of April 4) at the Simcoe Research Station, Simcoe(Figure

1). This is approximately 15% of what is required to reach bloom. In comparison with the past four years, the season has accumulated a similar quantity of GDD as 2017. In 2016, 39 GDD were accumulated by March 14, while in 2018 and 2019, this point was not reached until April 30 and April 13, respectively.

It is important to recognize that most of the GDD accumulates after mid April – the time when temperature impacts plant development the greatest in the march toward bloom.

Using temperature forecasting data, as of April 5 full bloom for apples should occur close to May 20<sup>th</sup>. Note that this prediction is only as good as the daily temperature data it relies on– and it is generally difficult to accurately estimate data six weeks in advance.

In summary, based on the observation using GDD, the 2020 spring growing season is shaping up as fairly ‘normal’.

It is my sincere hope that you will be able to complete your winter pruning, spring fertilizer and spray programs and planting on schedule and have the sufficient help to achieve this in these uncertain times.

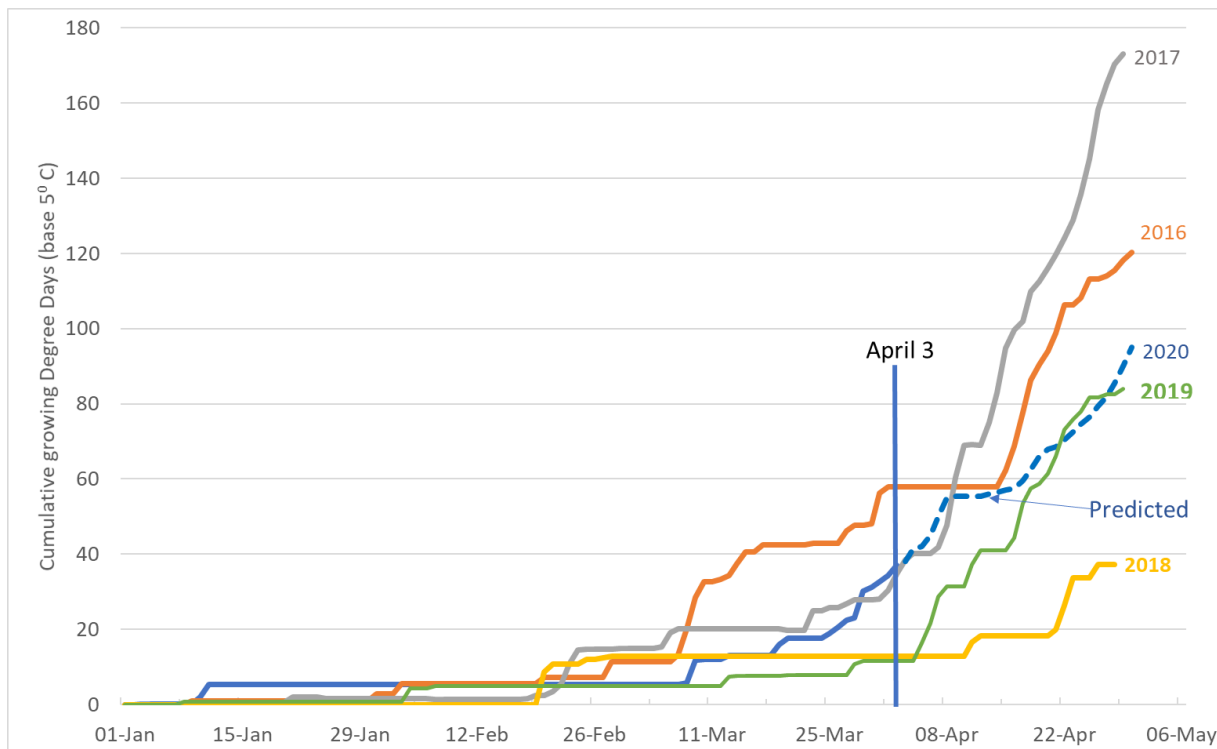


Figure 1. Heat accumulation from Jan 1 – April 30 at the Simcoe Research Station, as express by growing degree days (base 5°C), for the 2016 - 2020 growing seasons. The data from April 3 – 30, 2020 (dashed blue line) has been estimated based predicted daily minimum and maximum temperatures.

Select resources you may wish to investigate

#### Online Weather Data and Forecasting

- Weather and forecasting (<https://farmwest.com/climate>)
- Environment Canada -current weather, past weather ([https://climate.weather.gc.ca/historical\\_data/search\\_historic\\_data\\_e.html](https://climate.weather.gc.ca/historical_data/search_historic_data_e.html))
- Accuweather (current weather and forecast 30-60 days (<https://www.accuweather.com/en/ca/canada-weather>))
- Weather Underground – useful interface (<https://www.wunderground.com/weather/ca/collingwood>)

#### Growing Degree Resource:

- A useful interface for calculating growing degree days for various locations in Ontario (<https://farmwest.com/climate/gd>)
- Farmzone.ca