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"In This Issue"

You Suspect Herbicide Drift – Now What?

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Updated May 2021 by Kristen Obeid, OMAFRA Weed Management Specialist – Horticulture: Erika DeBrouwer, OMAFRA Tree Fruit Specialist and Tom Cowan, Pesticides Specialist, MOECC

With the new 2,4-D- and dicamba-tolerant crop technology available in field crops, horticulture growers are concerned about drift of these pesticides, especially with the experience the United States has been having. Crop injury caused by herbicide drift is guaranteed to cause misery and confrontation, not to mention insurance claims and legal charges. ***No one wins when herbicides drift*** – the applicator loses two ways: his herbicide misses the target, giving poor weed control, **plus** he is liable for damage; the "receiving" grower loses yield, crop health, perhaps timely markets plus his time. Sometimes our environment loses, and in general, agriculture loses in the public eye.

There Are a Number of Steps to Follow When you Suspect Herbicide Drift:

1. **Diagnose the problem:**
   - Familiarize yourself with the symptoms of auxin herbicide damage on your crops.
   - Is it really drift? Eliminate other possible causes. Disease, insect, nutrient deficiency, herbicide carryover, improper spray tank cleanout, environmental stress can resemble herbicide drift injury.
   - Are there patterns in the field? Is the damage worse next to the spray source, with less damage occurring across the field? Is the damage patchy? If it is, you need to check your soil pH. If your pH is considered high or low, test for herbicide carryover.
   - Is there evidence of a spray application? Look for wheel tracks, weed symptoms, boom patterns and overlap on the headlands. Look for spray evidence in neighbouring fields, lawns, ditches, etc.

2. **Contact the appropriate people:**
    - Talk to your neighbour or the sprayer operator. Ask what was sprayed, when it was applied and who did the application.
    - **Contact the Ministry of the Environment Conservation and Parks District Office or Spills Action Center (SAC): 1-866-663-8477. The SAC is available 24/7 and they will then contact the appropriate Environmental Officer and pesticide specialist in your region. Local MECP offices can be found at the following web address:** https://www.ontario.ca/environment-and-energy/ministry-environment-district-locator.
    - **It is extremely important to report as soon as possible because the concentration of herbicide drops quickly within the plant. Do NOT wait until there are symptoms.**
    - MOECC officers can do a site visit, take samples of tissue and soil, and have them analyzed for the suspect herbicides. Where appropriate, the offending applicator may face charges under the Pesticide Act. ***Charges will be pursued only if off label use is identified from the information gathered.***
        * Because of the wording of some of the labels and the difficulty of tracking down all the information needed, this has always been a very difficult thing to pursue in grower-to-grower drift incidents.
        * The results from the MOECC lab are available for the grower and, if enough information is collected, the grower is encouraged to pursue civil court if insurance and/or cooperation with the applicator does not work. According to the label of most pest control products, the applicator is liable for any damage caused by the misapplication of a pesticide.
    - Contact your insurance adjustor and advise the applicator to contact theirs.
    - Report the incident to the PMRA Voluntary incident reporting system: https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/public/protecting-your-health-environment/report-pesticide-incident.html
    - Report the incident to the manufacturer of the product. See the label for the 1-800 number. Labels can be found at: http://pr-rp.hc-sc.gc.ca/ls-re/index-eng.php

3. **Document all details of the problem:**
    - Collect spray records (yours – to prove it wasn't your sprays) and the offending applicators'.
    - Collect weather records (temperatures, possible temperature inversions, wind speed, wind direction, rainfall – for the date of application).
    - Take photos (many). Record date and location on each photo. Repeat photos several times through the season.
    - Document yield loss from the damaged area and an undamaged area. Choose a similar planting (same age, cultivar, rootstock, etc). For perennial crops (e.g. vineyards, orchards, asparagus, berries) document the effects **for several years** after the damage occurred.

Every herbicide applicator must take all possible steps to avoid herbicide drift. So what should an applicator do?

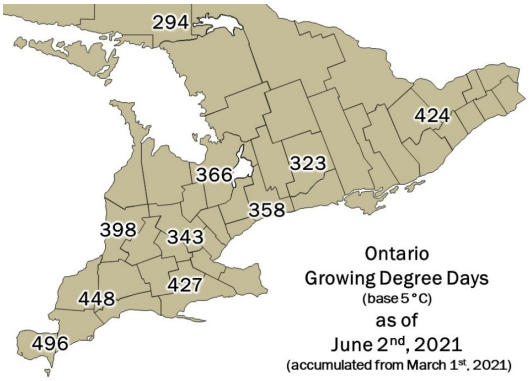
1. **Work with the weather.** Avoid spraying when the weather is against you, e.g. when winds are above 11 km/hr or dead calm, when temperatures are above 30°C, and/or when relative humidity (RH) is above 80%.
    - **Identify vulnerable crops near your fields.** Choose a spray day when winds are blowing away from these sites.
    - **Make your spray less prone to drift.** Choose herbicides with a low risk of volatility. Avoid products like 2,4-D or dicamba near susceptible crops (grapes, tomatoes, peppers, sweet potato, tobacco, non-2,4-D or dicamba tolerant soybeans, etc.) or greenhouses. Choose higher water volumes and use air-induction (AI) nozzles which will greatly reduce drift risk. Do not exceed the recommended driving speed if there is one listed on the label.
    - **Work with your neighbours.** Let them know your intentions. Consider creating buffer areas between vulnerable crops. Greenhouse growers need to be notified to close vents during early morning spray times to avoid any possibility of drift.

Other resources

1. OMAFRA Fact sheet: Pesticide Drift from Ground Applications http://www.omafra.gov.on.ca/english/crops/facts/11-001.htm
2. Sprayers 101 www.sprayers101.com for resources on sprayer cleaning and the dangers of temperature inversions.

VCR – Vegetable Crop Report – June 3rd, 2021

The VCR (vegetable crop report) is a weekly update which includes crop updates, weather and growing degree summaries for various vegetable growing regions across Ontario.



Temperature – Day temperatures are forecasted to range from low twenties to low thirties depending on region.

Nighttime temperatures are forecasted to be in mid-teens for most regions. The Growing Degree Day values have started tending toward the ten year average, with most regions being ahead of the average by around 50 degree days. Degree day data for each region is shown below.

Rainfall – The forecast for most regions is partly cloudy with scattered showers over the weekend with scattered thunderstorms forecasted for mid next week for most regions.

Crop Updates

Brassica Crops – Transplants are establishing well if there is adequate moisture. Wilted plants may be due to millipedes (**Figure 1A**) or seedcorn maggot damage and if the leaves are turning purple, the wilt may be due to wirestem, caused by Rhizoctonia (**Figure 1C**). If transplants have leaves cut off in the field around the soil line, dig around the plant and look for cutworm larvae. (**Figure 1B**). Adult click beetles(wireworms), diamondback moths, imported cabbageworms and flea beetles are active and the first-generation threshold for cabbage maggot emergence has now been reached in several counties.

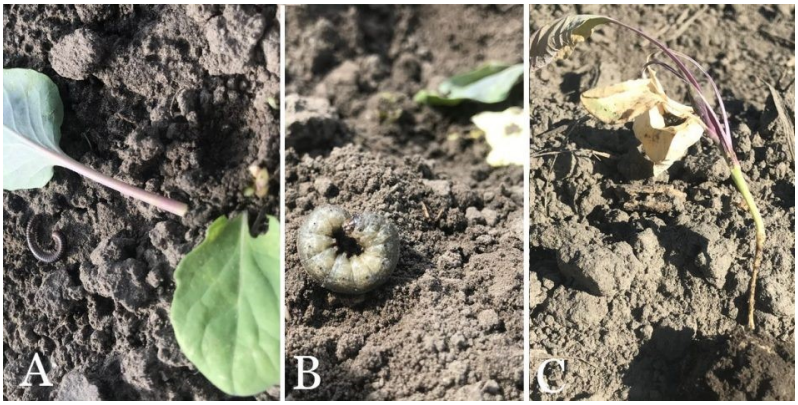


Figure 1. Scout for transplant damage from millipedes (**A**), cutworms (**B**) and wirestem/Rhizoctonia damage (**C**).

Celery – The majority of transplants have been planted. The thresholds for aster leafhopper and tarnished plant bugs have been reached in all regions. Dig up wilted plants and inspect the roots/plug for cutworm larvae.

Carrot – Carrot weevils are active and currently laying eggs. Use carrot bait traps to monitor for them as they enter the field. We have passed the degree day threshold for carrot rust fly and small numbers have been caught on orange sticky traps in some fields (**Figure 2**). Black cutworm has been identified in some vegetable fields. Keep an eye out for cutworm damage in carrots fields like clipped leaves and cut-off plants.

Figure 2. Carrot Rust Fly caught on orange sticky card

Garlic – Plants across the province are starting to send out the scape leaf on hardneck cultivars. Irrigation may be required for bulbs to size well in areas that have had little precipitation over the past month. Reports of leek moth damage and catches in delta cards are low for the past week. Depending on the area, the second flight of leek moth will be active over the next two to three weeks. Tipburn is widespread across the province this year and may be due to frost damage, lack of moisture or herbicide injury. It is difficult to find plants that are still green to the tip.

Onions – The majority of seeded onions are in the second leaf stage. The degree day threshold for onion maggot has been reached in all growing areas and maggots are actively feeding in several areas (**Figure 3**). With the cooler weather over the past two weeks, some onions are showing signs herbicide damage which is likely due to the lack of a waxy layer. Control volunteer onions in neighbouring fields as this can be a source for fungi inoculum like Stemphylium or pests like onion thrips. Thrips have been found over the past two weeks on volunteer onions. Black cutworms are active and can cause damage that looks like the onion has been cut with scissors above the soil line (**Figure 4**). Dig around suspect plants to look for cutworm larvae within the soil.

Figure 3. Onion maggot larvae found in SW Ontario on June 2nd, 2021

Figure 4. Black cutworm damage to a direct seeded onion

Peppers – Peppers are being planted now and are about 60% done. Cutworms and wire worms can both cause stand losses in peppers. Keep an eye out for damage to transplants at the soil line.

Potato – Colorado potato beetles are emerging and active. We are looking for Colorado Potato Beetle samples again this year to test for insecticide resistance. If you are finding a lot of beetles and are interested in participating, please reach out to Dennis (dennis.vandyk@ontario.ca 519-766-5337) to arrange a submission. Watch for emergence issues and keep an eye out for early season seed issues like fusarium, Rhizoctonia, soft rots and seed-borne late blight.

Sugarbeets – Are up and stands look good. Cutworms can cause early season damage to seedlings. Look for plants that have a clean "cut" at the soil line.

Tomatoes – Tomato transplants are in the ground now. Keep an eye out for early season pests that can cause significant stand losses. Cutworms and wireworms are active right now. Keep an eye out for damage to transplants at the soil line. Colorado potato beetle is also coming out and can cause significant damage to transplants. Look for bright orange eggs on the underside of leaves and defoliation caused by larva and adults.

Pest Degree Day Forecasting

*NOTE: Data as of June 3rd, 2021

Pest	Carrot Rust Fly	Onion Maggot	Carrot Weevil	Aster Leafhopper	Tarnished Plant Bug	Cabbage Maggot	Seedcorn Maggot	European Corn Borer
THRESHOLD	**329-395, 1399-1711**	**210-700, 1025-1515**	**138-156, 455+**	**128+**	**40+**	**314-398, 847 -960, 1446-1604**	**200-350, 600-750, 1000-1150**	**See legend below**
Essex*	648	**572**	360	**254**	**143**	425	572	212
Chatham-Kent*	589	**516**	328	**232**	**116**	**385**	516	192
Norfolk**	565	**494**	427	**307**	**211**	**365**	494	170
Huron***	525	**460**	398	**297**	**214**	**345**	460	179
Wellington**	470	**403**	343	**242**	**160**	289	403	127
Simcoe County***	501	**431**	366	**258**	**173**	309	431	139
Durham***	491	**424**	358	**246**	**169**	297	424	138
Peterborough	456	**387**	323	**216**	**139**	265	387	108
Kemptville***	563	**493**	424	**301**	**203**	**360**	493	165
Sudbury***	401	**345**	294	**212**	**152**	250	**345**	125

*- Bivoltine region for ECB. First Peak Catch: 300-350 DD, Second Peak Catch 1050-1100 DD
**- Overlap region for ECB. First Peak Catch : 300-350 DD Second Peak Catch 650-700 DD, Third Peak Catch 1050-1100 DD
***-Univoltine region for ECB. Peak Catch 650-700 DD

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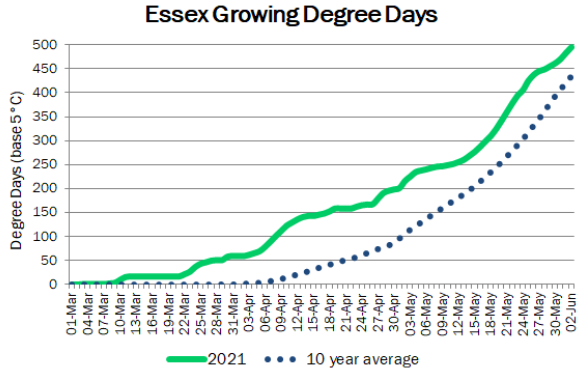
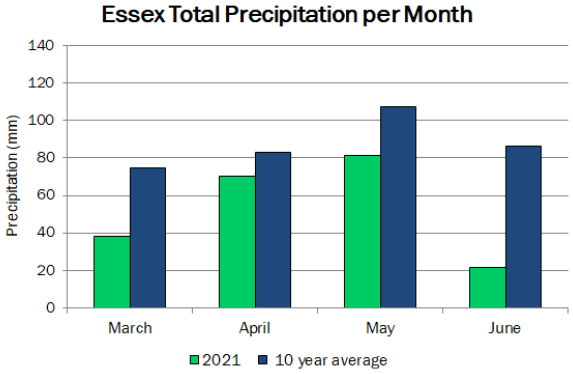
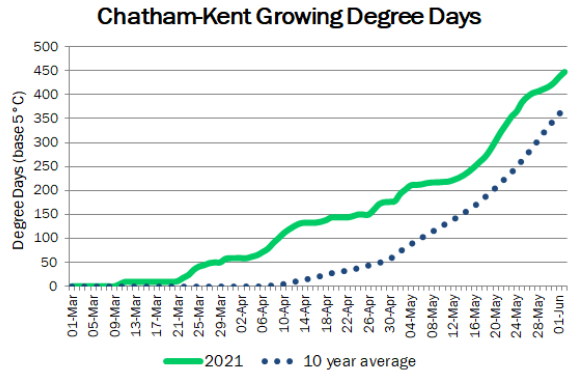
Use these thresholds as a guide, always confirm insect activity with actual field scouting and trap counts.
Select a region below for the latest weather, crop and pest degree day information:
Essex County(https://onvegetables.com/2021/06/04/vcr2021-3/#essex)
Chatham-Kent County(https://onvegetables.com/2021/06/04/vcr2021-3/#chatham-kent)
Norfolk County(https://onvegetables.com/2021/06/04/vcr2021-3/#norfolk)
Huron County(https://onvegetables.com/2021/06/04/vcr2021-3/#Huron)
Wellington County(https://onvegetables.com/2021/06/04/vcr2021-3/#wellington)
Simcoe County(https://onvegetables.com/2021/06/04/vcr2021-3/#simcoe)
Durham County(https://onvegetables.com/2021/06/04/vcr2021-3/#durham)
Peterborough(https://onvegetables.com/2021/06/04/vcr2021-3/#peterborough)
Kemptville(https://onvegetables.com/2021/06/04/vcr2021-3/#kemptville)
Sudbury(https://onvegetables.com/2021/06/04/vcr2021-3/#sudbury)

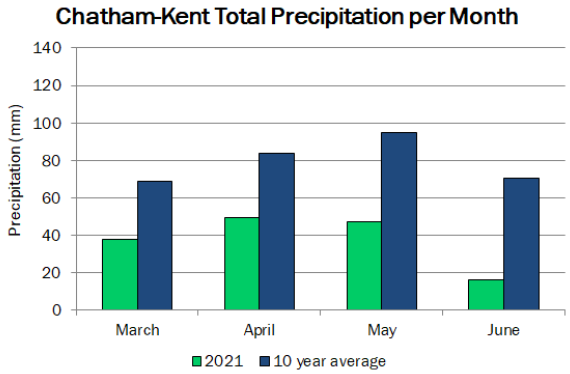
Essex County



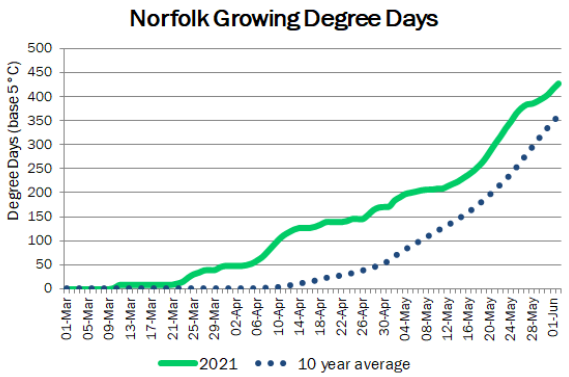


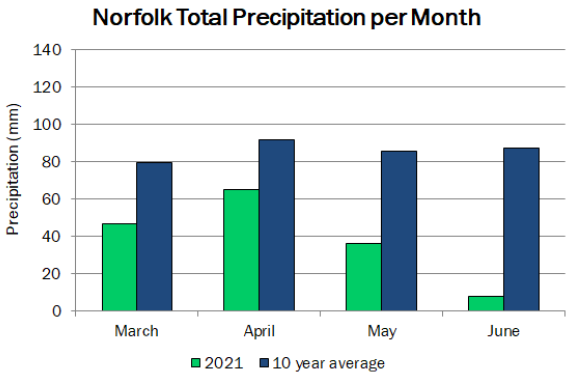
Chatham-Kent County





Norfolk County





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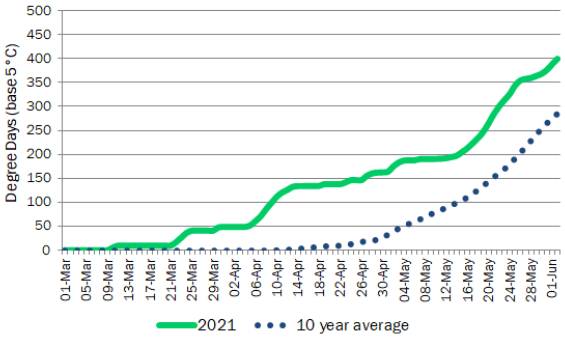
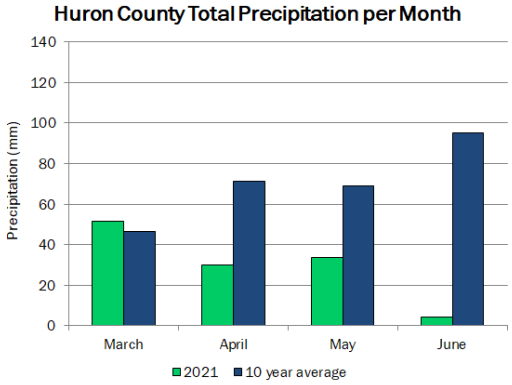
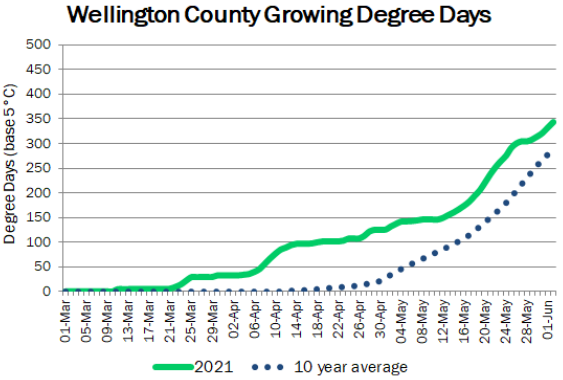
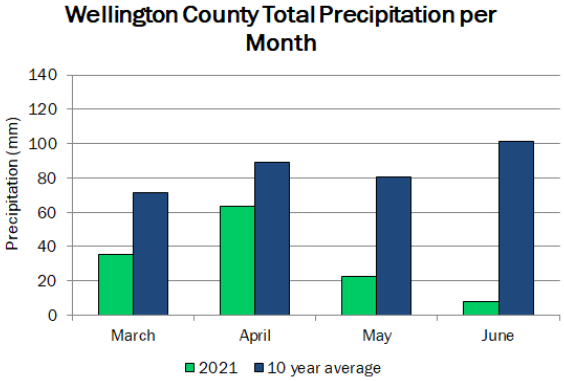
Huron County



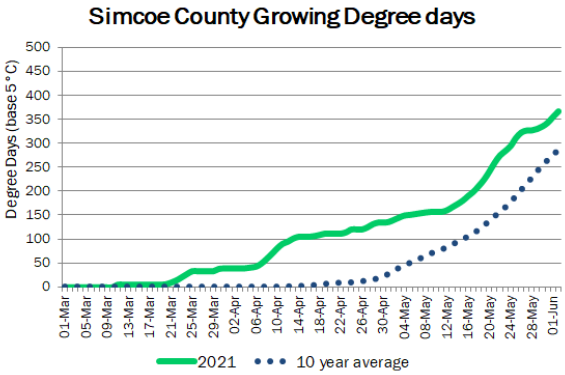


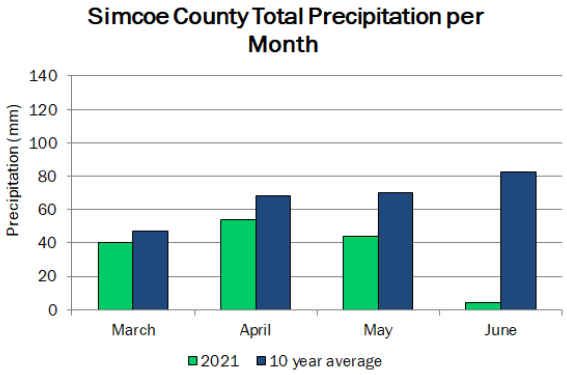
Wellington County



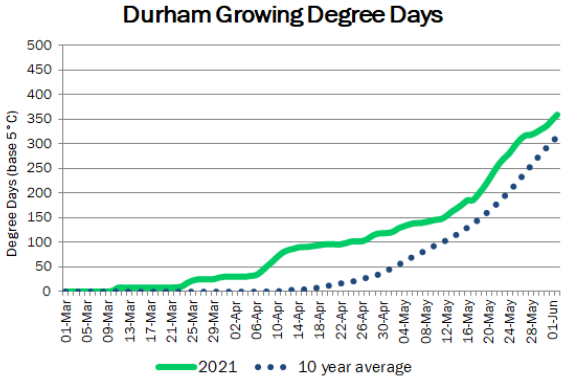


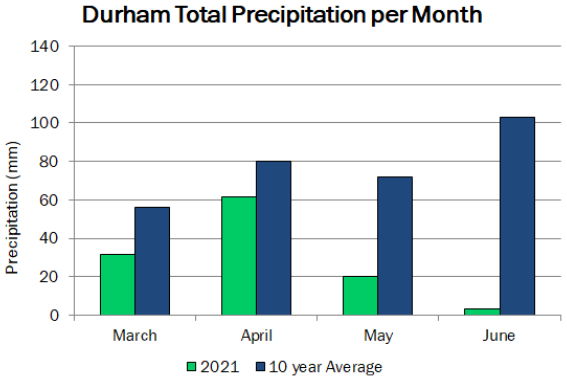
Simcoe County





Durham County





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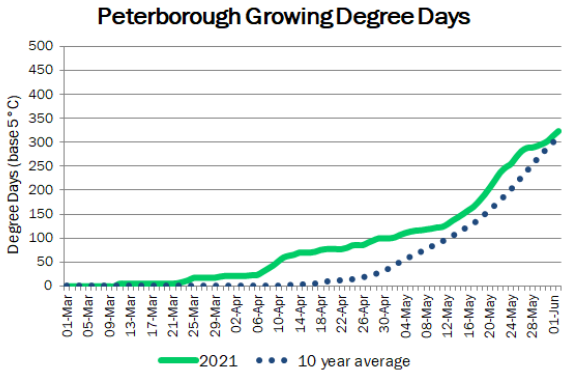
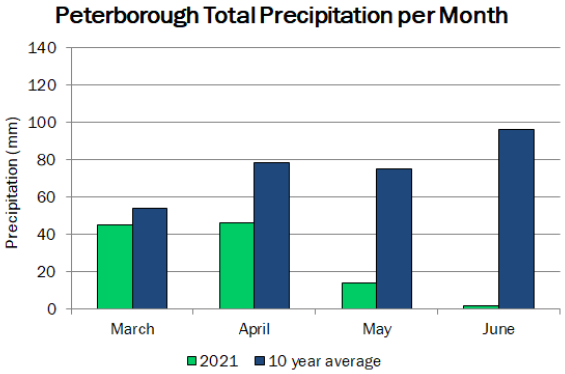
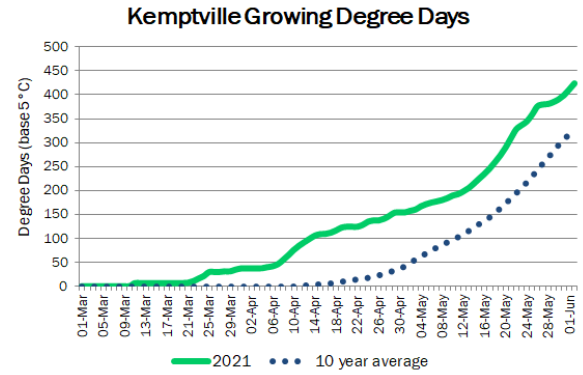
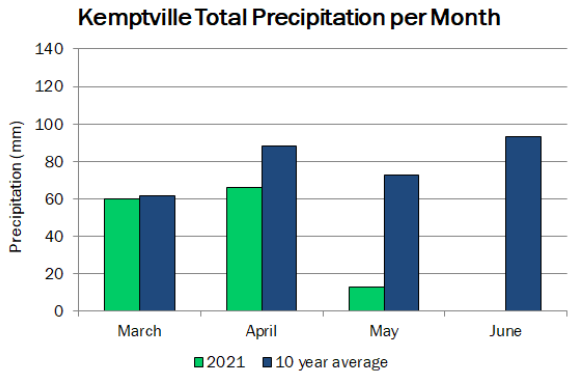
Peterborough





Kemptville





Sudbury