Monday, June 17, 2024

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"In This Issue"

AgRobotics Demonstration Days

Join the AgRobotics Working Group for its Demo Days on the 4th and 11th of July!

About the AgRobotics Working Group;
The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)and Haggerty Creek Ltd. established the AgRobotics Working Group in March 2021. This group is dedicated to conducting on-farm demonstrations, fostering networks, facilitating collaboration, and brainstorming current and future technology solutions. The AgRobotics WG has been instrumental in bringing several new technologies to Ontario for testing and demonstration – Naio Orio, Naio Oz, FarmDroid, Nexus La Chevre or the Goat, Agrointelli Robotti and Korechi Innovations HCW etc. The Group meets weekly to discuss ideas, review new technologies, apply for funding opportunities and develop priorities for Ontario Agriculture.

Members include representatives from all agriculture areas to obtain different perspectives and gain expert insight. This includes OMAFRA, Agriculture and Agri-Food Canada, Municipal Governments, Haggerty AgRobotics, University of Guelph, McMaster University, University of Waterloo, Conestoga College, Ontario Fruit & Vegetable Growers Association (OFVGA), Fresh Vegetable Growers of Ontario (FVGO), Holland Marsh Growers Association (HMGA), Ontario Processing Vegetable Growers (OPVG), Innovative Farmers Association of Ontario (IFAO), Nortera, Korechi Innovations (Oshawa, Ontario), Nexus Robotics (Montreal Quebec), FarmDroid (Denmark), Naio Technologies (France) and Raven Industries (Canada and U.S) and many more.

The overarching goal of the group is to assist both Canadian and international companies in validating their technologies within Ontario's diverse production systems.

Technology on Display at the Ontario Crops Research Station – Bradford July 4:
Picketa L.E.N.S. https://www.picketa.com/

The LENS system rapidly performs plant tissue analysis in the office or in the field. the data is processed on Picketa's cloud platform and transformed into nutrient concentrations. Currently able to monitor potatoes and corn, onions under development.

NEXUS Goat https://nexusrobotics.ca/

The Nexus Goat navigates and removes weeds autonomously, integrating a real-time computer vision module, AI-driven algorithms, and self-guidance system, minimizing herbicide use and reducing environmental impact.

Naïo Orio https://www.naio-technologies.com/en/orio-is-the-most-versatile-tool-carrier/

The Orio is an autonomous tool carrier with an RTK GPS guidance system. It works in a multitude of crops including lettuce, onions, carrots, cabbage, leeks, cauliflower, various herbs, and many more. An intuitive user interface makes Orio easy to set up and use. It can be used for seeding, cultivating, weeding, data collecting, spraying, etcetera. With funding through the Agri-Alliance you will see the Orio seeding, weeding, and spraying.

AgRobotics Demonstration Days…con't

FarmDroid FD20 https://farmdroid.com/

Seeding and inter/intra-row weeding robot. It knows exactly where the seed is planted, enabling it to weed as close to the plant as possible. Guided by RTK GPS. Developed on sugar beets, canola, onions, and spinach in Denmark. It is solar powered with a backup battery and can cover 12-15 acres per day. With funding from the Agri-Alliance you will see the FarmDroid FD20 working in onions.

Technology on Display at the Ontario Crops research Station – Simcoe July 11:
Vitirover https://www.vitirover.fr/

Professional robot lawn mower. An effective ecological solution for maintaining vegetation without damaging soil, trees, vines, or plants. Mows within predefined plots, delicately coming into contact with obstacles in order to mow as close as possible to them. Solar powered and autonomous.

Naïo Oz https://www.naio-technologies.com/en/oz/

The Oz works autonomously thanks to its RTK GPS guidance system, freeing up time for other tasks. Multifunctional, with an assortment of implements available – torsion springs, brushes, seeder, Kress fingers, harrow, spiked-harrow, ridger, and more! The Oz is perfect for small plots and market gardens.

AgXeed AgBot https://www.agxeed.com/

Designed for autonomous smart spraying applications in orchards. State of the art safety features and sensors ensure crops and farmers are safe.

The Burro https://burro.ai/

Designed to work alongside people, the Burro is an autonomous mobile platform that can carry, tow, scout, patrol, mow, push, pull, or propel a variety of attachments. Able to travel on a programmed path or follow a person so that it is always where you want it to be.

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Vivid Machines Vivid X Vision System https://www.vivid-machines.com/

The ultimate crop load management system for thinning, farm management, and yield. The Vivid X Vision System mounts onto any farm equipment and provides real time data and predictions for every plant. Improve orchard management with up-to-date maps detailing precise tree counts, varieties, and rootstocks, while monitoring blossoms, fruit development, and yield at the block and section level.

Harvest Corp and Triton Innovation Automatic Autonomous Harvesting Unit https://www.harvestcorptechnologies.com/

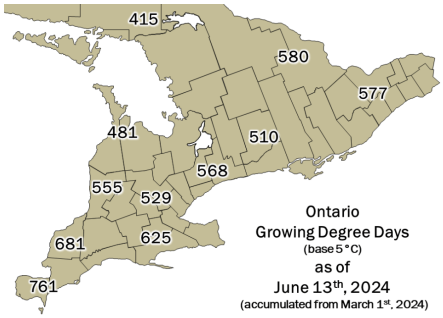
Able to reduce asparagus crews of 5 or 6 down to a single operator, and harvest 60 spears per minute, up to 30 acres per day.

Korechi Innovations HCW and the Weed Scouting Project https://korechi.com/roamio-hcw/

The HCW is capable of autonomously navigating fields to automate various tasks, with a ground clearance of 32" and adjustable width which could be used with a variety of crops. The Weed Scouting Attachment is designed to autonomously scout lima beans to create weed density maps for herbicide application and harvest avoidance.

VCR – Vegetable Crop Report – June 13, 2024

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.



Welcome to this week's VCR! All counties continue to trend above their 10 year average GDD.

Crop Updates

Brassica Crops – Cutworm damage is being found in many different crops and Brassicas are no exception. Damage found on the lower leaves of plants with no sign of lepidopteran pests may be the result of early-morning slug feeding. Stunted plants with red leaves and girdled crowns are likely due to wirestem / Rhizoctonia infection. Continue to scout for imported cabbageworm, cabbage looper, diamondback moths, tarnished plant bugs and aphids. If wilted plants are found, dig up the transplant and inspect the root ball for cabbage maggot larvae.

Carrots – With most of the acreage planted, we're at a critical timing for weed control. Use the Ontario Crop Protection Hub to know what pre-emerge and post-emerge products are available for carrots: Weed control search (gov.on.ca)(https://cropprotectionhub.omafra.gov.on.ca/control-solutions/field-crop-weed-control?cs=5edf995f-ff4a-4406-805a-c5bb9937d261)

Using pre-emerge products are important to reduce the reliance on Lorox.

Aster leafhopper infectivity testing out of Michigan State University has consistently been very high this spring. Our aster yellows incidence tracks very closely with Michigan from year to year so growers should be prepared to manage leafhoppers this season. Use orange sticky cards to monitor flushes of leafhoppers into the field. Check the Ontario Crop Protection Hub to see products registered for use on carrots(https://cropprotectionhub.omafra.gov.on.ca/control-solutions/crop-protection-vegetables?cs=5edf995f-ff4a-4406-805a-c5bb9937d261&pe=a0c68755-21fd-4c86-883e-70f2854ca4a7&vw=cardGrid).

Celery – Transplants are establishing well. Scout for leaf damage caused by tarnished plant bug. Dig up wilted plants and inspect the roots for cutworm larvae, nematode cysts, or carrot weevil larvae.

Garlic – Now that scapes have emerged, plants are showing tip dieback / yellowing of the leaves. Scapes should be removed as soon as possible for the best yield potential. Lots of leek moth larvae feeding damage has been reported over the past week. An article on how to monitor leek moths can be found here: https://onvegetables.com/2023/05/17/leek-moth/. If using Bt to control leek moth, apply the product on cloudy days or in the evening to avoid UV degradation.

Onions – The largest direct seeded onions are reaching the 6th leaf stage while most fields are still around the 4th leaf stage. Cutworm damage is sporadic, with some fields are showing high amounts of damage this year. Monitor for thrips and dig up wilted plants to confirm onion maggot damage. Low levels of thrips are starting to be observed. Past research has shown that Movento 240 SC (group 23) has some residual activity that works better against larvae when it is applied twice earlier in the season. Once the spray threshold has been met, Movento 240 SC could be followed by two applications of Delegate (group 5) or Agri-Mek (group 6). Using a penetrating surfactant can be useful to maximize the effectiveness of products against thrips. Apply no more than two consecutive insecticides from the same IRAC crop as thrips have a relatively short life cycle with multiple generations through the summer months and are at a high risk of developing insecticide resistance.

Peppers – Pepper planting is still ongoing, and growers should ensure they are finished planting by June 20th is they want crop insurance for this season. Growers in 2-generation and overlap European corn borer areas should be on the look-out for the pest as the first peak is has begun Kent county and in the London and Sarnia areas. Though the second peak will be more worrisome as the plants will have fruit at that time, there are many control options available for growers in need. Always make sure to read all product labels before any pest control product application.

Potatoes – Early planted potatoes have had excellent growing conditions and some fields are in full flower.

Figure 1. Flowering potato field

High incidence of cutworms are being reported across the province this year. In potatoes, damage will show as clipped off stems near the soil surface (Figure 2) and in some cases large, ragged feeding holes on the leaves (Figure 3). Cutworms feed at night and then bury themselves in the soil during the day. The curled-up cutworm larvae in Figure 3 was found by digging in the top 1-2 inches of soil around the damaged plants.

Figure 2. Cutworm damage on potato plant stem

Figure 3. Cutworm larvae and cutworm damage on leaves of a potato plant

For more information on cutworms see the Ontario Crop IPM entries: Black cutworm(https://cropipm.omafra.gov.on.ca/en-ca/crops/potatoes/insects-and-mites/8bb8c0ec-b814-4532-b3db-b0ffbe815c04), Variegated cutworm(https://cropipm.omafra.gov.on.ca/en-ca/crops/potatoes/insects-and-mites/c2532afe-a3b8-41e9-85f9-88ccadb954b1)

Follow the link to see Registered products for cutworms in potatoes(https://cropprotectionhub.omafra.gov.on.ca/control-solutions/crop-protection-vegetables?cs=c6e2caff-9769-40ec-8abb-21259fbbd1cb&pe=e5d2b98d-d956-4641-8268-7512280feca6,200c4130-5c0f-4fe9-85d1-c3484daeae19,100db5a3-d896-41ca-897d-8fd8082e5dfb&vw=cardGrid)

Because of our relatively cool and wet start to the season, seed rot and emergence issues are being reported.

On emerged plants, blackleg(https://cropipm.omafra.gov.on.ca/en-ca/crops/potatoes/diseases/b9d16253-b411-4753-a1eb-3d0741690bf8) causes stunted, yellowing, wilted plants with leaves cupping upwards (Figure 4). The stems will be inky black (Figure 5) and generally smelly.

Figure 4. Leaves curling up on blackleg infected potato plants

Figure 5. Stem damage on blackleg infected potato plants

Tomatoes – Planting is wrapping up for processing tomatoes. Growers should still be looking out for Colorado potato beetle (CPB). Since losing key in-furrow insecticide products a few years ago, the potential for significant damage to young plants is higher. CPB is critical to manage during the transplant phase as the adults (Figure 6) and larva (Figure 7) can cause significant defoliation of plants, often leading to plant death. There are a few foliar products that growers can use for CPB control, but you will need multiple applications to control these early populations. Target adults when you start seeing damage, then follow-up with another spray, using a product from a different insecticide group, 5-7 days later once eggs have begun to hatch (Figure 7). Continue to monitor for CPB and damage as additional applications may be needed. Be sure to read all product labels thoroughly before any pest control product application and follow resistance management strategies. CPB are known to be resistant to group 1 insecticides in many parts of Ontario.

Figure 6. Colorado potato beetle adult and eggs on tomato transplant

Figure 7. Colorado Potato beetle larva freshly hatched from eggs on defoliated tomato transplant.

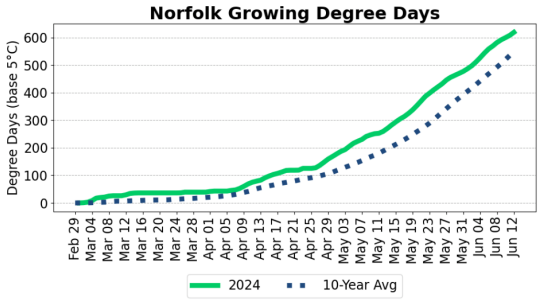
Pest Degree Day Forecasting

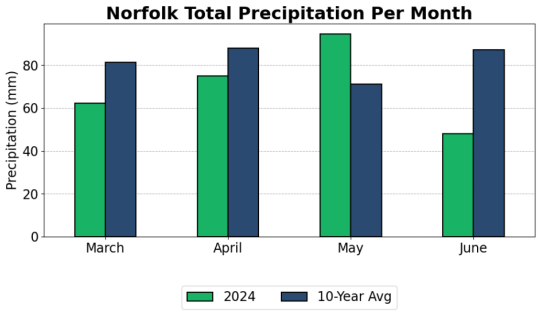
County	Carrot Rust Fly	Onion Maggot	Carrot Weevil	Aster Leafhopper	Tarnished Plant Bug	Cabbage Maggot	Seedcorn Maggot	European Corn Borer
THRESHOLD	329-395, 1399-1711	210-700, 1025-1515	138-156, 455+	128+	40+	314-398, 847-960, 1446-1604	200-350, 600-750, 1000-1150	See legend below
Bruce***	632	**553**	353	**241**	**113**	413	553	194
Essex*	937	846	**601**	**463**	**278**	678	846	399
Chatham-Kent*	847	760	**530**	**402**	**227**	601	760	339
Norfolk**	791	703	**467**	**339**	**179**	540	**703**	281
Huron***	714	**630**	408	**287**	**152**	477	**630**	233
Wellington Centre**	689	**606**	396	**280**	**139**	459	**606**	228
Wellington North**	672	**592**	384	**272**	**139**	448	592	220
Simcoe***	659	**580**	375	**260**	**128**	438	580	207
Durham***	727	**643**	423	**302**	**155**	491	**643**	248
Peterborough	668	**586**	377	**259**	**123**	442	586	209
Kemptville***	732	**649**	445	**331**	**187**	506	**649**	279
Sudbury***	538	**472**	305	**212**	**104**	**357**	472	170
Timiskaming***	518	**458**	301	**213**	**111**	**349**	458	173
Lambton**	821	737	**507**	**378**	**218**	579	**737**	319
Thunder Bay	400	**339**	187	113	35	231	**339**	82
Middlesex**	835	748	**513**	**382**	**218**	586	**748**	324
Renfrew	724	**644**	441	**332**	**192**	503	**644**	282

*- 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

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:
Norfolk(https://onvegetables.com/2024/06/13/vcr2024-7/#NorfolkLink)
Essex(https://onvegetables.com/2024/06/13/vcr2024-7/#EssexLink)
Sudbury(https://onvegetables.com/2024/06/13/vcr2024-7/#SudburyLink)
Chatham-Kent(https://onvegetables.com/2024/06/13/vcr2024-7/#ChathamKentLink)
Peterborough(https://onvegetables.com/2024/06/13/vcr2024-7/#PeterboroughLink)
Huron(https://onvegetables.com/2024/06/13/vcr2024-7/#HuronLink)
Durham(https://onvegetables.com/2024/06/13/vcr2024-7/#DurhamLink)
Thunder Bay(https://onvegetables.com/2024/06/13/vcr2024-7/#ThunderBayLink)
Bruce(https://onvegetables.com/2024/06/13/vcr2024-7/#BruceLink)
Kemptville(https://onvegetables.com/2024/06/13/vcr2024-7/#KemptvilleLink)
Lambton(https://onvegetables.com/2024/06/13/vcr2024-7/#LambtonLink)
Middlesex(https://onvegetables.com/2024/06/13/vcr2024-7/#MiddlesexLink)
Renfrew(https://onvegetables.com/2024/06/13/vcr2024-7/#RenfrewLink)
Simcoe(https://onvegetables.com/2024/06/13/vcr2024-7/#SimcoeLink)
Wellington Centre(https://onvegetables.com/2024/06/13/vcr2024-7/#WellCentreLink)
Wellington North(https://onvegetables.com/2024/06/13/vcr2024-7/#WellNorthLink)
Timiskaming(https://onvegetables.com/2024/06/13/vcr2024-7/#TimiskamingLink)

Norfolk





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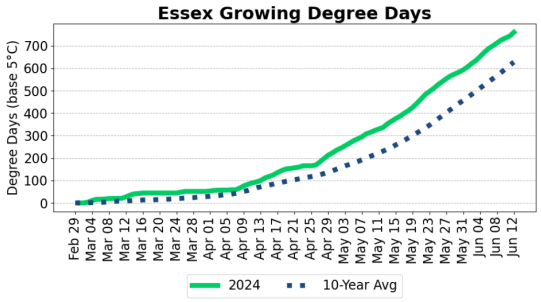

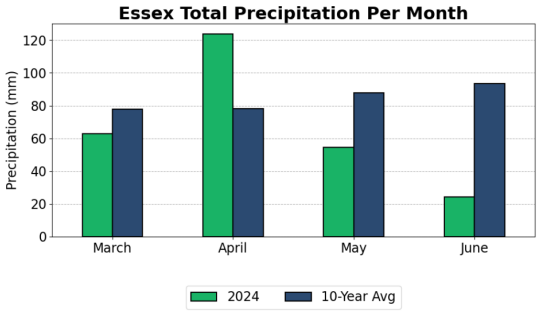

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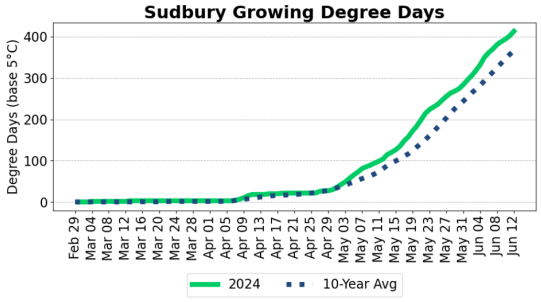
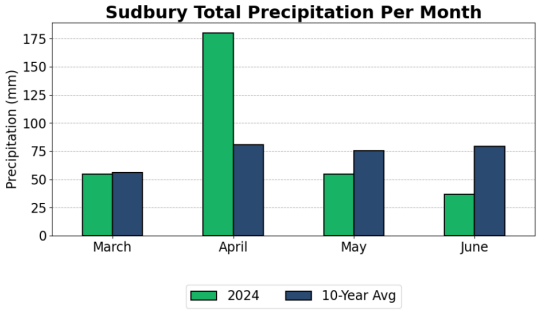
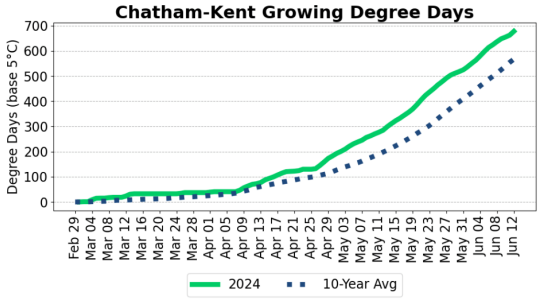
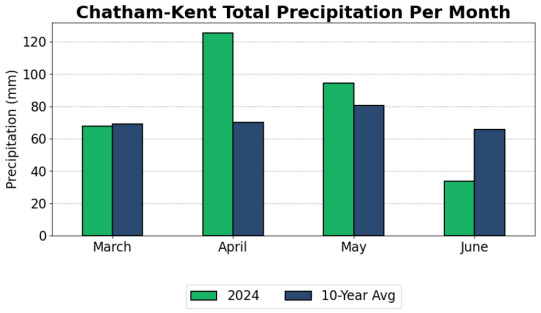


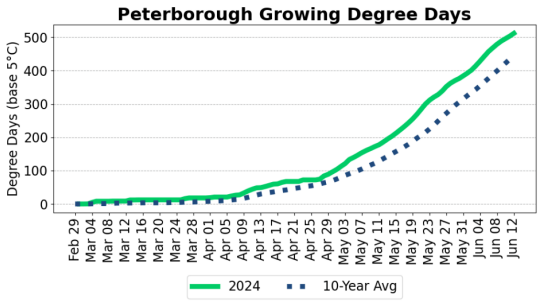


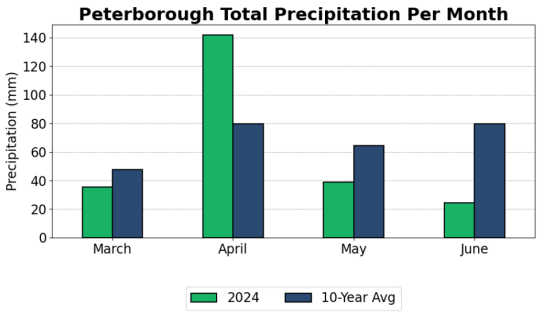
Chatham-Kent





Peterborough





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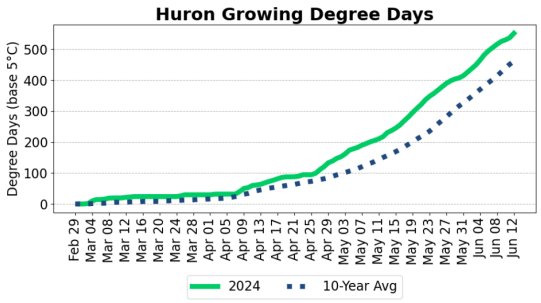
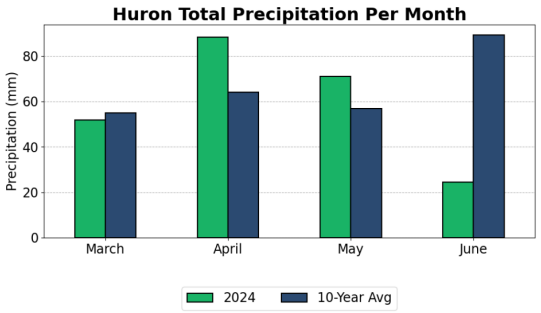
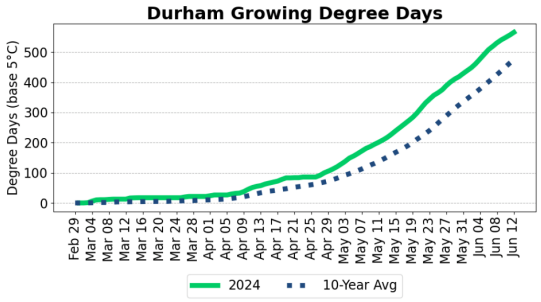
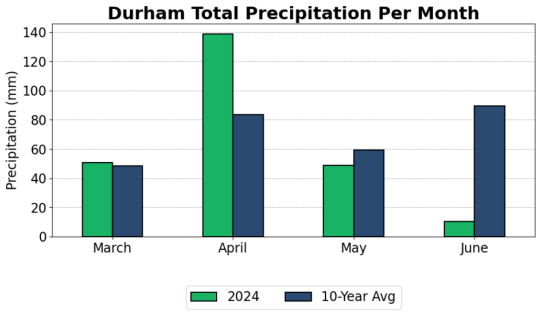




Durham





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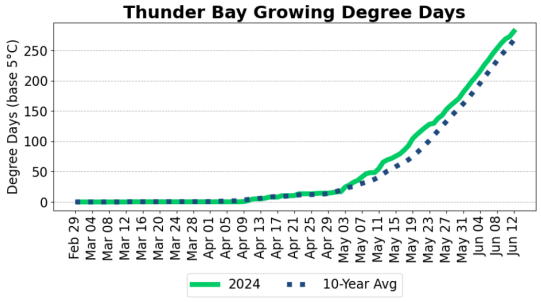
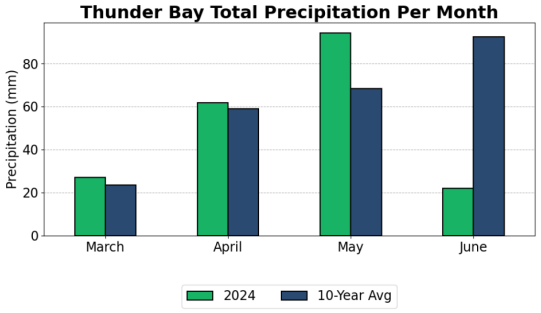
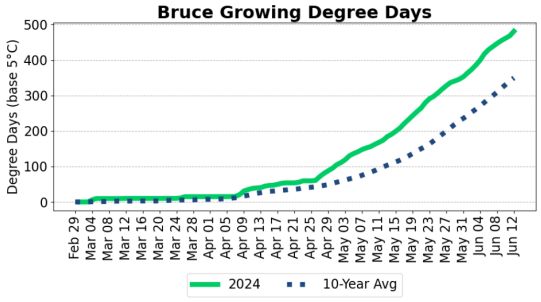
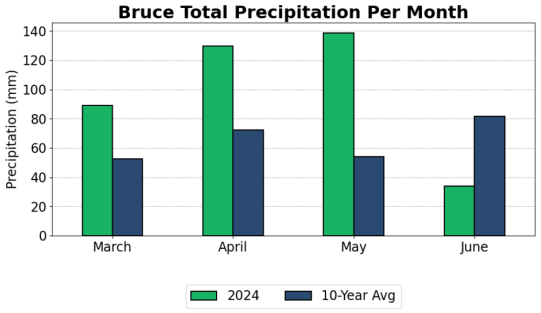


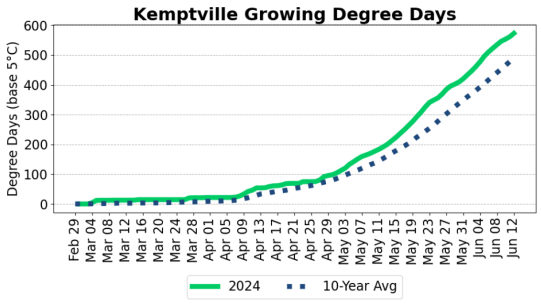


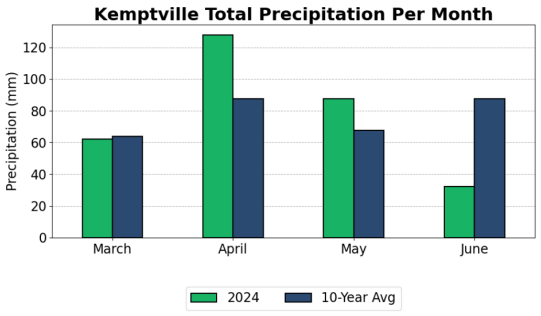
Bruce



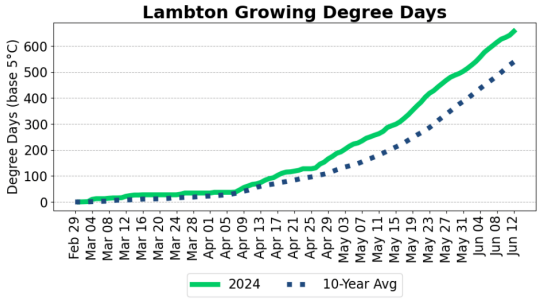


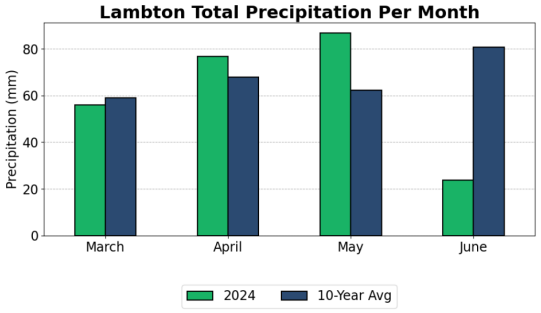
Kemptville





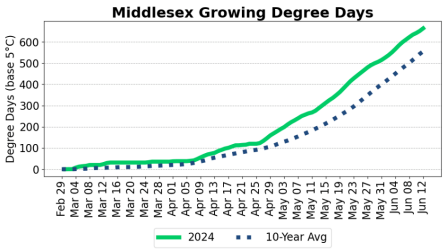
Lambton

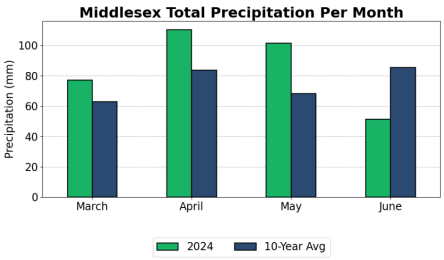




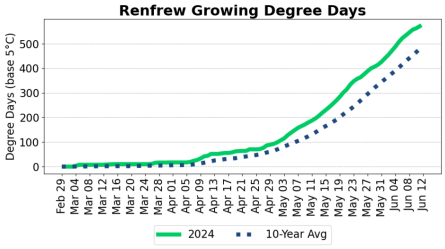
VCR – Vegetable Crop Report – June 13, 2024…con't

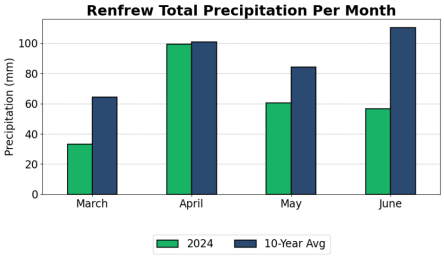
Middlesex





Renfrew





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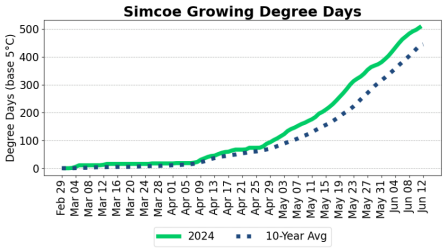
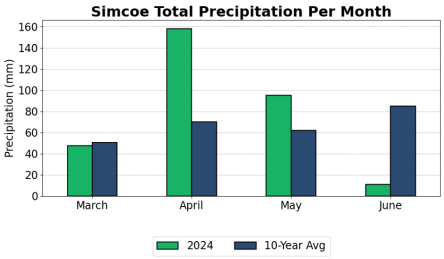
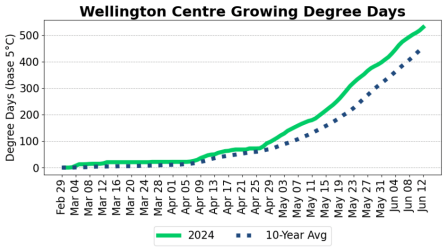
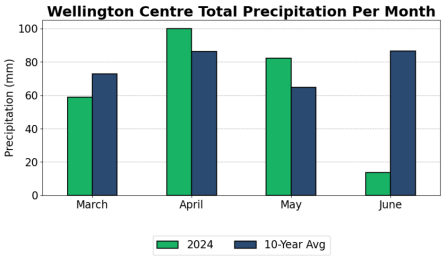




Wellington Centre





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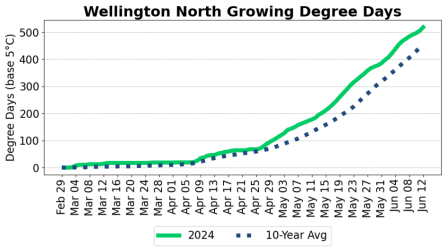

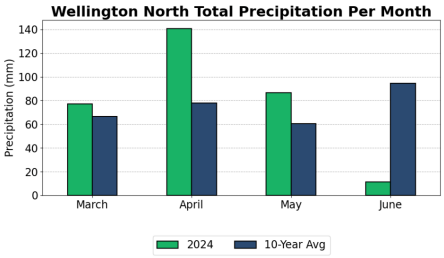

Timiskaming