

OMAFRA Vegetable Team:

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AgRobotics in Ontario Kristen Obeid, Weed Management Specialist – Horticulture, OMAFRA

Join us for two demo days featuring multiple ag robots.

What a challenging-few-years the agriculture sector and the world has had. But challenges pave the way for opportunities. And there are opportunities abound in the AgRobotics space. What is the problem you are trying to solve? Likely, there is a company somewhere in the world trying to solve it.

Since 2021, an AgRobotics Working Group comprised of more than 50 people (OMAFRA staff, Haggerty Creek AgRobotics, growers, grower associations, agri-business, universities and colleges, federal and municipal governments and technology companies) have been meeting weekly. The group brainstorms about available and future technologies, builds networks and collaborations, conducts on-farm demonstrations, and builds cross-functional teams to apply for funding opportunities in hopes of ground truthing these technologies in Ontario production systems. The technology companies are impressed with the diversity of production, government support and research capabilities in Ontario.

In 2021, Haggerty Creek AgRobotics Division along with OMAFRA and grower associations conducted six demonstrations with three different robots in Brussels sprouts, cauliflower, peppers, onions, carrots, celery, strawberries and haskaps. The robots included:

- Naïo Oz is an inter-row weeding robot. Capable of weeding through standing crops in row widths of 30" or more. Guided by RTK GPS. It can attach any implement, such as a 1-row seeder, hooded sprayer, wagon to haul loads, etc. video of two robots in a celery field(<u>https://t.co/AtKkoEOzKg" / Twitter</u>)
- Naïo Dino is an inter-row weeding robot. Capable of weeding in any row spacing (adjustable tool bar) of a standing crop. Guided by RTK GPS.
- Korechi RoamIO is an autonomous platform for soil sensing, mowing, cultivating, the limit is your imagination.

There will be two demo days featuring multiple robots.

Join the AgRobotics Working Group for in-field demonstrations highlighting the NaïoDino and Nexus The Goat at the Ontario Crops Research Centre -Bradford (Muck Crops Research Station) located at 1125 Woodchoppers Lane, King, ON.



AgRobotics in Ontario...con't



No registration is required for the event on July 6th.

Join the AgRobotics Field Tour, July 13th from 9-4 either in-person or virtually. This tour starts at Haggerty Creek Ltd. 7708 Bentpath Line, Bothwell, ON, N0P 1C0. **Registration for the July 13th tour is required,** please sign up at <u>https://survey.clicktools.com/app/survey/go.jsp?iv=25t6zheg5h9kv</u> or by calling the Agricultural Information Contact Centre at 1-877-424-1300.



Arrive at 9AM	Refreshments at Haggerty Creek Ltd. (Haggerty AgRobotics Company) 7708 Bentpath Line, Bothwell, ON.					
9:15 –10:30 am	AgRobotics presentation and demonstration of robots for use in field crops.					
10:30 –11:00 am	Drive to 9488 McCreary Line, Dresden, ON.					
11:00 –11:45 pm	FarmDroid in sugar beets 9488 McCreary Line, Dresden, ON.					
11:45 –1:00 pm	Boxed lunch at Dresden Park.					
1:00 –2:00 pm	Travel to 9928 Walker Rd., Grand Bend, ON.					
2:00 –3:30 pm	Nexus La Chèvre weeding in carrots 9928 Walker Rd., Grand Bend, ON.					
3:30 –4:00 pm	Networking and travel home.					

Please reach out to Kristen Obied (kristen.obeid@ontario.ca) if you have any questions.

CENTURION and SELECT Herbicide labels expanded via Minor Use Program to help manage labelled weeds in Celery, Celeriac, and Napa Cabbage

Josh Mosiondz, Minor Use Coordinator, OMAFRA



The Pest Management Regulatory Agency (PMRA) recently announced the approval of a minor use label expansion registration for CENTURION® and SELECT® Herbicides for control or suppression of labelled weeds listed Celery, Celeriac, and Napa Cabbage in Canada. CENTURION® and SELECT® Herbicides were already labeled for management of weeds on a wide range of crops in Canada. These minor use proposals were submitted by Agriculture & Agri-Food Canada, Pest Management Centre (AAFC-PMC) as a result of minor use priorities established by growers and extension personnel.

The following is provided as an abbreviated, general outline only. Users should be making weed management decisions within a robust integrated weed management program and should consult the complete label before using CENTURION[®] and SELECT[®] Herbicides.

Crop(s)	Target	Rate (L product/ha)	Application Information	PHI (days)
Celery, Napa Cabbage	Suppression of Control of Labelled Weeds	0.19 – 0.38	Apply CENTURION / SELECT post-emergence of weeds and crop. Apply a maximum of one application per year using ground equipment. Apply in a minimum spray volume of 110 L/ha. Ground application only.	30
Celeriac	Suppression or Control of Labelled Weeds	0.19 – 0.38	Apply CENTURION /SELECT post- emergence of weeds and crop using ground equipment. Apply a maximum of two applications per year. If repeat application is required, allow at least 14 days between first and second application. Do not apply more than 0.38 L/ha (90 grams a.i./ha) per crop per season. Apply in a minimum spray volume of 110 L/ha. Ground application only.	30

TOXIC to aquatic organisms and non-target terrestrial plants. Observe buffer zones specific under DIRECTIONS FOR USE. Toxic to certain beneficial insects. Minimize spray drift to reduce harmful effects on beneficial insects in habitats next to the application site such as hedgerows and woodland. To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay. Avoid application when heavy rain is forecast. Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body. This product contains aromatic petroleum distillates that are toxic to aquatic organisms. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (for example, sandy soil) and/or the depth to the water table is shallow.

Follow all other precautions, restrictions, and directions for use on the CENTURION® and SELECT® Herbicides labels carefully.

For a copy of the new minor use label contact Travis Cranmer, Vegetable Crops Specialist, OMAFRA, Guelph (519) 835-3382, your regional supply outlet, or visit the PMRA label site <u>http://www.hc-sc.gc.ca/cps-spc/pest/registrant-titulaire/tools</u> -outls/label-etiq-eng.php

Note: This article is not intended to be an endorsement or recommendation for this particular product, but rather a notice of registration activity

VCR – Vegetable Crop Report – June 30th, 2022

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 – All counties continue to match or surpass their 10 year average GDD.

Precipitation – Most regions received some rain over the past week. Kemptville's total June precipitation is now just below it's 10 year average. Peterborough, Simcoe, and Huron* are the only counties that have met or surpassed their 10 year averages. Most fall below however Wellington county only received approximately half it's 10 year average rainfall for June.

(*Note: Due to unavailable data for Huron county last week, values from the closest

available weather station were used. They have now been replaced with generated predictive weather data that better reflects the area. With this update Huron region has surpassed it's 10 year average precipitation)

Crop Updates

Brassica Crops – Harvest continues for broccoli, cabbage and kale with early cauliflower fields starting soon. In areas that received adequate moisture, conditions have been more favourable for Alternaria (Figure 1). Reference the Ontario Crop Protection Hub to determine what products are registered for Alternaria depending on the Brassica. Allternaria resistance has been documented in other regions outside of Ontario and it is important to rotate FRAC groups after every Alternaria application. Cabbage maggot damage has been observed and is relatively average compared to other years. The degree day threshold for the second generation of cabbage maggot has been surpassed in Essex and shortly in Chatham-Kent and Norfolk. Diamondback moth and imported cabbageworms are the predominant insect pests currently with some fields showing very low levels of aphids and thrips. While scouting, dig up a few plants with a trowel and inspect the roots for nematodes, clubroot and cabbage maggot larvae. Cut open the stem and inspect for discolouration due to Fusarium yellows, Verticillium or Xanthamonas. Over the next week, look closely for thrips as well as Alternaria lesions.



Figure 1. Older cauliflower leaf with an Alternaria lesion. Alternaria often develops circular rings within leaf lesions.

Celery – Plants are establishing well. Aster leaf hoppers are active and in some fields the numbers are reaching the lower threshold of 10 leafhoppers/card. Scout and rogue plants showing yellow leaves/symptoms of aster yellows. It is unknown what percentage of aster leafhoppers may contain the aster yellows phytoplasma, but it is early in the season and the percent infected is likely to be low. If suspicious plants showing symptoms of aster yellows are found in or around the field, and the level of leafhoppers is high, it may be time for an insecticide application. Scout for tarnished plant bugs and scratch marks along the stalk left by carrot weevils. Dig up stunted and/or wilted plants and inspect roots for nematode cysts, or carrot weevil larvae or if plants were unable to establish properly after transplanting due to a lack of adequate moisture.

Cucumbers – looking at the calendar, this is typically the time of the year when we get the first report of cucurbit downy mildew in field cucumbers. To date we have not had any confirmed reports, but it is important to scout regularly. Broad spectrum fungicide sprays before the canopy closes are one of the best preventative management tools. While daytime temperatures above 30 C are not conducive to infections, consider nighttime temperatures and the duration of dewfall when planning your spray program. For more information, see https://onvegetables.com/2022/06/14/cucurbit-downy-mildew-get-out-and-scout-2/

Cucurbits Weeds – under dry conditions the performance of pre-emergence herbicides may be limited. If using Sandea post emergence keep in mind that it must be applied prior to the crop flowering.

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Garlic – Plants with adequate moisture are bulbing up nicely. Drought and in some cases, excess moisture stress, can lead to virus symptoms (such as stunting, mottling or streaking) to be more pronounced than in early in the season. Adult leek moth counts have risen sharply this week which will result in an increase in feeding damage to leaves this week and next. If applying insecticides, a single insecticide application is most effective when it is applied 10 days after the date that corresponds to the peak moth capture. If you plan on two applications, make the first application 3 to 7 days after the date of peak moth capture and the second treatment 14 days after peak moth capture. Multiple fields, in several areas across SW Ontario, are showing stunting in plants where the planting date was delayed after the bulb was cracked into cloves. Many of these fields were planted with bulbs that were cracked in late September or early October and planted 6-10 weeks later. Bulbs that have been cracked into cloves should always be planted within a week of cracking to avoid colonization of pathogens on wound sites. These pathogens (such as Fusarium and Penicillium), can weaken root establishment in the fall which may lead to increased winterkill and stunting the following year. Now is a good time to rogue out plants that show symptoms of viruses (like leaf mottling or stunting) in areas of the field where harvested bulbs will end up as planting stock for the 2022-2023 season.

Onions - The largest direct seeded onions are reaching the 7th-8th leaf stage while most fields are still around the 5-6th leaf stage with transplant onions starting to form bulbs. The threshold for the second generation of onion maggot has been reached in Essex county, and other southern areas will likely reach this threshold later in the week. The level of thrips continue to be low, but are likely to reach threshold within the next two weeks in most onion growing regions if the weather is hot and dry. Past research has shown that Movento 240 SC (group 23) has some residual activity that works better against larvae when it is applied earlier in the season as the first insecticide. If the number of thrips exceeds 3 thrips/leaf, Movento 240 SC (two applications) could be followed by two applications of Delegate (group 5) or Agri-Mek (group 6). Malathion 85E (group 1B), Dibrom (group 1B), Entrust (group 5), Success (group 5), and Exirel (group 28) are also registered. 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. Stemphylium leaf blight has been detected and will likely be observed over the next two weeks. If Penflufen was part of the seed treatment, do not start with a foliar group 7 fungicide. For the first application, a product containing mancozeb (group M3s, such as Manzate Pro-Stick, Dithane Rainshield, and Penncozeb 75 DF Raincoat) may provide protection against Stemphylium if it is being applied to manage onion smut, Botrytis or Alternaria/Purple Blotch. Avoid applying products from the same chemical group one after the other to manage Stemphylium. For the second foliar product, products containing a group 7 show the best efficacy, such as Sercadis, Aprovia, or Miravis Duo (group 7/3). Research has shown that there is very high resistance in Stemphylium to one of the fungicides in Quadris Top (group 11/3) and in Luna Tranquility (group 7/9). Conditions were favourable for white rot over the past few weeks in some areas (Figure 2). Dig up plants that are wilting from the bottom/up and inspect the base of the plant for white mycelium with black sclerotia (Figure 3).



Figure 2. White rot of onion in a transplant onion field with lower leaves turning yellow and wilting – June 2022



Figure 3. White mycelium growing on onion bulb with black sclerotia present – June 2022.

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Pest Degree Day Forecasting

*NOTE: Data as of June 29, 2022

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
Essex*	1135	1039	771	622	433	856	1039	554
Chatham-Kent*	982	891	643	505	312	722	891	444
Norfolk**	993	904	655	510	310	735	904	446
Huron***	850	765	528	392	212	602	765	332
Wellington**	844	760	526	392	215	600	760	336
Simcoe County***	853	768	538	403	228	611	768	345
Durham***	912	823	580	441	248	657	823	378
Peterborough	842	758	523	393	209	597	758	333
Kemptville***	920	828	588	454	260	661	828	392
Sudbury***	712	644	453	338	178	515	644	287

*- 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:

Essex County(https://onvegetables.com/2022/06/30/vcr2022-9/#essex)

Chatham-Kent County(https://onvegetables.com/2022/06/30/vcr2022-9/#chatham-kent)

Norfolk County(https://onvegetables.com/2022/06/30/vcr2022-9/#norfolk)

Huron County(https://onvegetables.com/2022/06/30/vcr2022-9/#Huron)

Wellington County(<u>https://onvegetables.com/2022/06/30/vcr2022-9/#wellington</u>)

Simcoe County(https://onvegetables.com/2022/06/30/vcr2022-9/#simcoe)

Durham County(<u>https://onvegetables.com/2022/06/30/vcr2022-9/#durham</u>)

Peterborough(https://onvegetables.com/2022/06/30/vcr2022-9/#peterborough)

Kemptville(<u>https://onvegetables.com/2022/06/30/vcr2022-9/#kemptville</u>)

Sudbury(https://onvegetables.com/2022/06/30/vcr2022-9/#sudbury)

Essex County







Chatham-kent County



Chatham-Kent Total Precipitation per Month



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Norfolk County



Norfolk Total Precipitation per Month



Huron County



Huron County Total Precipitation per Month



Wellington County



Wellington County Total Precipitation per Month



Simcoe County





Simcoe County Total Precipitation per Month



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Durham County



Durham Total Precipitation per Month



Peterborough



Peterborough Total Precipitation per Month



Kemptville



Kemptville Total Precipitation per Month



Sudbury



Sudbury Total Precipitation per Month

