



# Fruit and Vegetable Growers of Canada's Canadian AgriScience Cluster for Horticulture 4

## Update to the Industry for March 2026

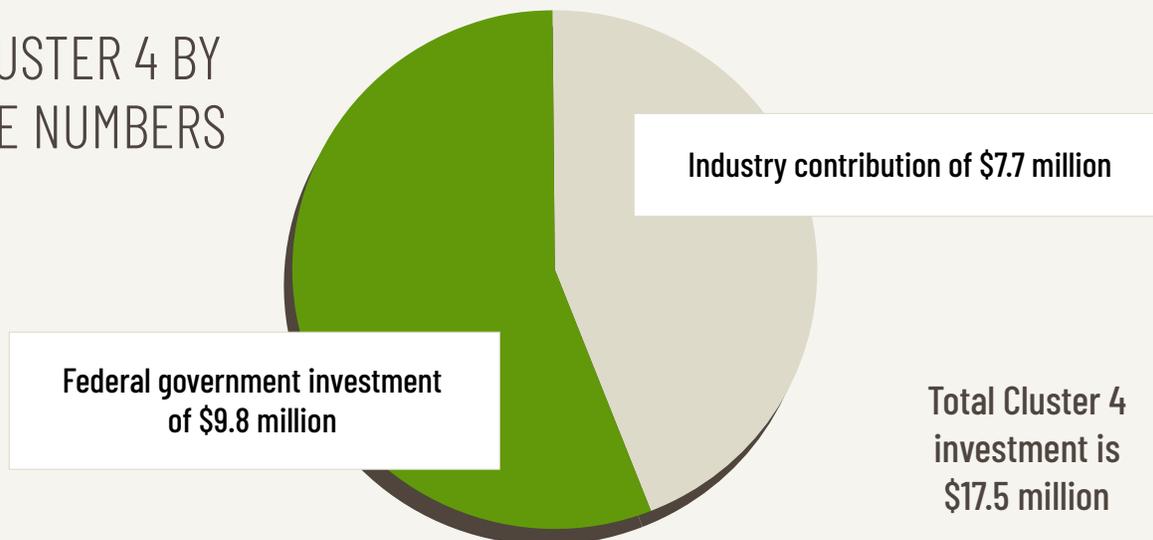
The Canadian AgriScience Cluster for Horticulture Cluster 4 is in its fourth year – with promising research advancements. Spanning from 2023 to 2028, Cluster 4 contains 10 research activities focused on the innovation, competitiveness and sustainability of Canada's fruit and vegetable industry.

Cluster 4 is addressing key challenges in the Canadian horticulture industry facing the production of apples, berries, field vegetables, greenhouse vegetables and potatoes. Through the 10 research activities, researchers are investigating ways to improve operational efficiency and sustainability for growers, reduce on-farm chemical use, improve soil health and identify more sustainable fruit and vegetable varieties for growers across the country.

This project is generously funded through the Canadian Agri-Science Cluster for Horticulture 4, in cooperation with Agriculture and Agri-Food Canada's AgriScience Program, a Sustainable Canadian Agricultural Partnership initiative, the Fruit and Vegetable Growers of Canada (FVGC), and industry contributors.

As researchers head into the last research year, they're seeing preliminary results. Some of these results are very promising and are starting to be used in growers' fields, greenhouses and orchards. Read on to learn more about this exciting research.

### CLUSTER 4 BY THE NUMBERS





## Apple Research Activities

The apple group has two research activities with the Canadian AgriScience Cluster for Horticulture Cluster 4. These two activities are focused on helping apple growers across Canada protect their orchards and be more productive and sustainable.

THE CLUSTER 4 APPLE RESEARCH ACTIVITIES ARE:

### ACTIVITY 4

#### Reducing losses from apple pests with alternative control strategies

LEAD RESEARCHER – Suzanne Blatt, research scientist in entomology with Agriculture and Agri-Food Canada at the Kentville Research and Development Centre

### ACTIVITY 5

#### Apple crop load management: enhancing thinning predictability and tree response through advancements in modelling and new precision thinning products, strategies and technology

LEAD RESEARCHER – John A. Cline, professor of tree fruit physiology at the University of Guelph

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## Reducing Losses from Apple Pests with Alternative Control Strategies



LEAD RESEARCHER

**Suzanne Blatt**

Research entomologist with Agriculture and Agri-Food Canada at the Kentville Research and Development Centre

This research is working to reduce apple crop losses from pests such as apple maggot, ambrosia beetles and leafrollers. The research team has been investigating a protocol for sterile insect release for control of apple maggot (SIR for AM). Ambrosia beetles are being identified in apple orchard agroecosystems, along with new methods to manage the pest. Researchers are also working to find a sustainable non-pesticide tool for management of leafrollers. These projects are all meant to identify a non-pesticide option for control of apple pests across Canada.

In the fall 2024, two prototype injectors for spraying *Trichogramma minutum* in apple orchards to parasitize leafroller eggs were tested. Of the two prototypes, growers found one easy to use. Experiments were then fine-tuned. A series of spray trials in the experimental orchard tested how effectively the *Trichogramma* were distributed over the apple foliage. Last summer, two additional sprays of *Trichogramma* were done to test their ability to parasitize leafroller eggs using oblique banded leafroller (*Choristoneura rosaceana*) sentinel egg masses. The percentage of *Trichogramma* parasitism, determined by counting the number of emerged *Trichogramma* from the eggs, was estimated after each application. Results have been promising and researchers expect to have a finalized version of the device ready for trials in Nova Scotia and British Columbia this year.

Bark beetles were trapped in 10 orchards in Ontario and four orchards in B.C. last year. Around four times more beetles were captured in 2025 than 2024 in B.C. Two years of collection data is now available from these sites. Landscape features were recorded during 2024 and 2025. Dead and dying trees from six orchards in Ontario were sampled for beetles. An insecticide assay for ambrosia beetles was done next to an orchard in the Niagara Ontario region. Currently available insecticides, including Pounce, Altacor Max, Exirel, Delegate, Closer,



The sleeve cage set up used as part of the sterile insect release for control of apple maggot (SIR for AM) trial. Photo: Kim Hiltz

Aceta, were found to be ineffective for reducing the number of beetle entry holes compared to the control when tested at one, two and three weeks following application. Beetle gallery formation and species identifications are underway.

The needed ratio of sterile flies to wild flies to reduce oviposition from apple maggot was tested in the lab last winter. Researchers found an increasing reduction in apple maggot success at 67 per cent, 82 per cent and 94 per cent, as the ratio of sterile to wild flies increased 10:1, 20:1 and 30:1 (sterile to wild), when compared to controls. Field trials last summer used the 30:1 ratio and compared the number of pupae realized versus controls. SIR reduced apple maggot success by 84 per cent compared to the controls. Final test trials of the artificial diet for rearing apple maggot are happening this winter. A final recommendation on the feasibility of sterile insect release for apple maggot control and mass rearing to be made this spring.





KEY TAKEAWAYS:

- Results for a prototype injector have been promising for spraying eggs parasitized by *Trichogramma minutum* in apple orchards. Researchers expect to have a finalized version of the device ready for trials in Nova Scotia and British Columbia this year.
- Currently available insecticides, including Pounce, Altacor Max, Exirel, Delegate, Closer, Aceta, were found to be ineffective for reducing the number of beetle entry holes.
- Researchers have found an increasing reduction in apple maggot success as the ratio of sterile to wild flies increased.
- The final test trials of the artificial diet for rearing apple maggot are happening this winter with a final recommendation to be made this spring.





# Apple Crop Load Management: Enhancing Thinning Predictability and Tree Response Through Advancements in Modelling and New Precision Thinning Products, Strategies and Technology



LEAD RESEARCHER

**John A. Cline**

Professor of tree fruit physiology at the University of Guelph

This research activity is aimed at thinning flowers or fruits on overloaded apple trees using new chemical thinners and technologies. At the Ontario Crops Research Centre in Simcoe, Ont., several experiments were conducted this past growing season addressing the research objectives. The 2025 fall harvest in the region went as expected and was fairly typical.

In 2025, the Ontario research team tested late applications of Accede for the thinning of Ambrosia and Gala apples. Accede didn't display effective thinning. This could be due to weather conditions or other physiological reasons though – the researchers are continuing to investigate.

At Walsh Farms in Berwick, N.S. the research team has evaluated decision-support tools and new fruitlet thinners under two growing seasons to account for

weather variability. Both new chemical thinners are now commercially available. Extreme drought conditions in the region limited fruit weight and yield during the 2025 growing season.

One product, Brevis, will be commercially available for the first time in Canada this spring. Accede, previously became commercially available in 2024. Results from this research activity will provide grower insight on how to implement its use in commercial orchards.

### KEY TAKEAWAYS:

- Late applications of Accede for the thinning of Ambrosia and Gala apples didn't display effective thinning in Ontario. Late application of Accede for thinning of Honeycrisp apples was effective in Nova Scotia though. This could be due to weather conditions or other physiological reasons.
- Extreme drought conditions in Nova Scotia limited fruit weight and yield during the 2025 growing season.
- Brevis will be commercially available for the first time in Canada this spring.



Gala apples were harvested in late September from treatment trees as part of the fruit thinning research trial in Nova Scotia.



Gala apple trees ready to be harvested in late September as part of the fruit thinning research trial in Nova Scotia. Photos: Michelle Cortens





## Berry Research Activities

There is one research activity from the berry sector for the Canadian AgriScience Cluster for Horticulture Cluster 4. This research activity is focused on finding new berry varieties for growers across Canada.

THE CLUSTER 4 BERRY RESEARCH ACTIVITY IS:

### ACTIVITY 6

#### Canadian Berry Trial Network

LEAD RESEARCHER – Beatrice Amyotte, research scientist for small fruit germplasm development with Agriculture and Agri-Food Canada at the Kentville Research and Development Centre

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## Canadian Berry Trial Network



### LEAD RESEARCHER

#### **Beatrice Amyotte**

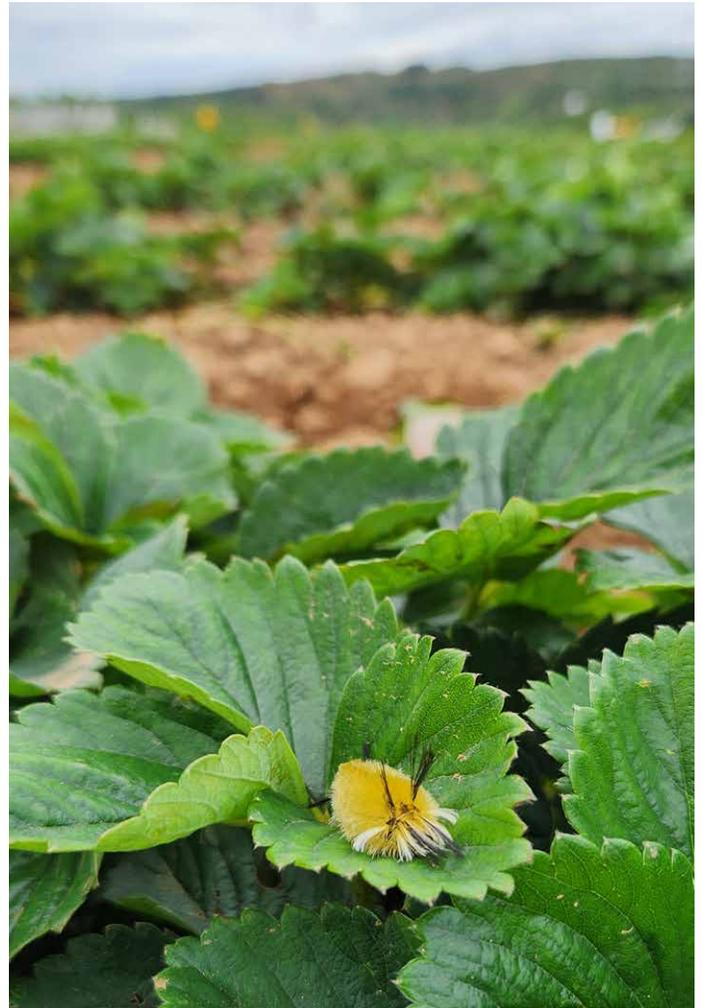
Research scientist for small fruit germplasm development with Agriculture and Agri-Food Canada at the Kentville Research and Development Centre

The purpose of the Canadian Berry Trial Network (CBTN) is to look into how new and established berry cultivars will perform in the typical berry growing regions of British Columbia, Ontario, Quebec and Nova Scotia. Fruit quality traits and yield potential are evaluated along with the economic competitiveness of new berry cultivars.

New varieties are currently being selected for strawberry and blueberry trials to be planted in 2026 and 2027. The long list for strawberry varieties includes 16 short day (June-bearing) and 20 long day (day-neutral) varieties. The trial varieties will be chosen based on industry consultations conducted in British Columbia, Ontario, Quebec and Nova Scotia as well as plant availability. Numbered selections from Agriculture and Agri-Food Canada and new cultivars from Onesime Pouliot's partnership with De Kemp BV are among the potential varieties. The list for blueberry includes nine advanced highbush selections from the B.C. Berry Breeding Program that will be integrated into an established trial of 16 varieties planted in 2022. Plants will be purchased and circulated in spring 2026; the next trial plantings for raspberry varieties will happen in 2027.

New strawberry trials were planted last spring. Varieties were chosen based on industry consultations in B.C., Ontario, Quebec and Nova Scotia as well as plant availability. These included 10 varieties each of short day (June-bearing) and long day (day-neutral) strawberries with some variation between locations due to differences in provincial priorities. There were numbered selections from Planasa and new cultivars from UC Davis among the varieties. The long-day plants were evaluated during the 2025 growing season in Quebec and Ontario; all other trials will be evaluated in 2026.

The strawberry trials planted in 2024 were evaluated during this past summer and fall. These included 10 short day and 10 long day varieties, with some variation between locations. Similarly, the blueberry trials planted



Strawberry trials at Agriculture and Agri-Food Canada at the Kentville Research and Development Centre in Nova Scotia. Photo: Beatrice Amyotte

in 2022 were evaluated last year too. These include around 16 highbush varieties, with some variation between locations. Data aggregation and analysis is ongoing.

The raspberry trials planted in 2024 were managed to promote plant health and vigour for the first harvest this upcoming year. On-farm raspberry trials conducted in B.C. showed some promise for advanced selections from the B.C. Berry Breeding Program, including BC 1855.11 and BC 1855.14. These will be included in the 2027 raspberry replicated trials since they're good candidates for fresh markets and mechanized harvest.





Blueberry trials at Agriculture and Agri-Food Canada at the Kentville Research and Development Centre in Nova Scotia. Photos: Beatrice Amyotte

In Quebec, for summer-bearing strawberries, the selection K15-11 showed the highest total yield, although it wasn't statistically different from the standard cultivar Jewel. K15-11 also had one of the lowest proportions of culled fruit among the varieties with the largest average fruit size, along with the UC cultivars Monarch and Surfline. In terms of flavour, Jewel remained the most well-liked variety. In fall-bearing strawberries, Planasa selections 19-106R and 19-011R, showed strong agronomic performance, with 19-011R producing a lower proportion of culled fruit. However, these selections were rated as low to moderate for flavour. Seascape continued to perform very well for taste, with Murano showing comparable sensory quality.

#### KEY TAKEAWAYS:

- The summer strawberry selection K15-11 showed the highest total yield in Quebec, although it wasn't statistically different from the standard cultivar Jewel.
  - K15-11 had one of the lowest proportions of downgraded fruit and ranked among the cultivars with the largest average fruit size.
- In Quebec the fall strawberry varieties, Planasa selections 19-106R and 19-011R, showed strong agronomic performance, with 19-011R producing a lower proportion of downgraded fruit.
  - These selections were rated as low to moderate for flavour.
- The Seascape strawberry variety continued to perform very well for taste, with Murano showing comparable sensory quality in Quebec.





## Field Vegetable Research Activities

The field vegetable sector has two research activities with the Canadian AgriScience Cluster for Horticulture Cluster 4. These two activities are focused on making soil more resilient and protecting vegetable crops against pests.

THE CLUSTER 4 FIELD VEGETABLE RESEARCH ACTIVITIES ARE:

### ACTIVITY 7

#### Increasing field vegetable yield and resilience to abiotic and biotic stresses through soil microbial engineering

LEAD RESEARCHER – Herve Van Der Heyden, research scientist with Agriculture and Agri-Food Canada Saint-Jean-sur-Richelieu Research and Development Centre

### ACTIVITY 8

#### Reduce risk strategies for cabbage maggot control

LEAD RESEARCHER – Renee Priya Prasad, associate professor and department head for agriculture at the University of the Fraser Valley

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## Increasing Field Vegetable Yield and Resilience to Abiotic and Biotic Stresses Through Soil Microbial Engineering

### LEAD RESEARCHER

#### Herve Van Der Heyden

Research scientist with Agriculture and Agri-Food Canada  
Saint-Jean-sur-Richelieu Research and Development Centre

This research activity is working to develop, validate and implement bacterial inoculum to improve field vegetable yield and plant diseases while reducing fertilizer and pesticide inputs. The research team has completed one year of trials under controlled conditions and two years of field trials under experimental conditions on lettuce and broccoli crops for growth promoters. These trials will proceed to commercial condition trials with growers over the next two years.

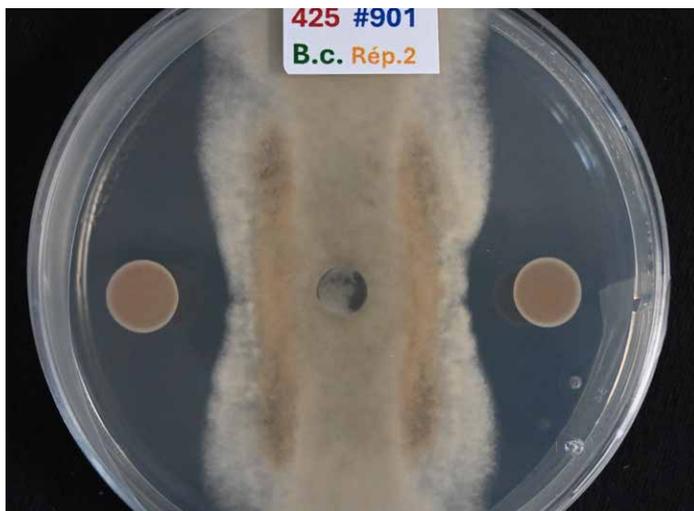
For biological control agents, researchers have begun screening a large collection of bacterial strains from the genus *Pseudomonas* to determine its biocontrol potential against a panel of phytopathogenic species including *Pythium spp.*, *Botrytis spp.*, *Rhizoctonia solani*, *Fusarium oxysporum* and many others.

Researchers have identified two bacteria strains with growth promotion potential for lettuce. Pre-transplant inoculation of the lettuce increased the foliar biomass of treated lettuce for a period of two to three weeks, allowing the plant to be more resilient during critical early growth stages. One of these two strains has been submitted to the invention disclosure process so it can be licensed to industry.

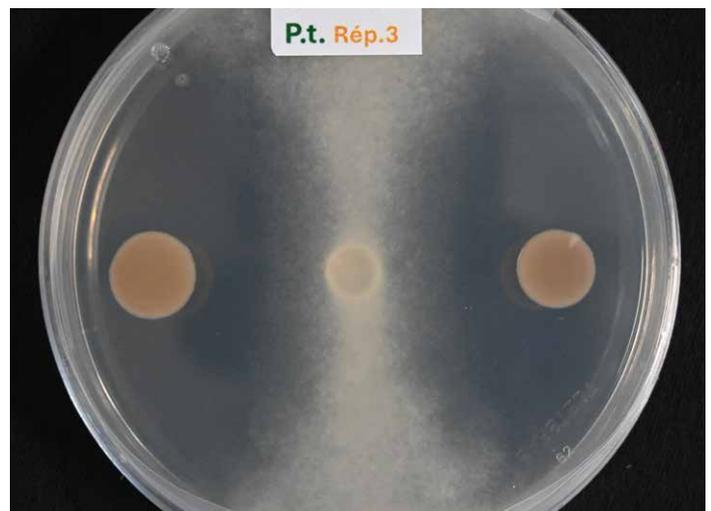


A field trial of lettuce in Sainte-Clotilde Experimental Farm in Quebec.

Photo: Melanie Cadieux



The bacterial strain *Pythium*. Photo: Melanie Cadieux



The bacterial strain *Botrytis*. Photo: Melanie Cadieux





On the biocontrol side, researchers are still screening the bacterial strain collection. However, they've already identified candidate strains capable of inhibiting the growth of several pathogens in vitro. Furthermore, some strains can inhibit the in vitro growth of pathogens for more than seven days.

**KEY TAKEAWAYS:**

- Researchers have identified two bacteria strains with growth promotion potential for lettuce. The bacteria increased the foliar biomass of treated lettuce for a period of two to three weeks.
- One of the two bacteria strains has been submitted to the invention disclosure process so it can be licensed to industry.
- Researchers have identified candidate strains capable of inhibiting the growth of several pathogens in vitro. Some strains can inhibit the in vitro growth of pathogens for more than seven days.





## Reduce Risk Strategies for Cabbage Maggot Control



LEAD RESEARCHER

**Renee Priya Prasad**  
Associate professor and  
department head for agriculture  
at the University of the Fraser Valley

Crucifers (crops in the cabbage family) provide numerous opportunities for Canadian vegetable growers but are under attack by cabbage root maggots. In this research activity, the team has been working to find new management tools to allow growers to see decreased crop losses from cabbage root maggot.

The research team has found the tools tested provide reduction in root maggot damage on roots for three weeks in earlier plantings of brassica crops. As plantings go later in the season, pest pressure increases with no reductions in damage compared to the untreated control.

Field samples are being collected to see how many parasitoids of *Delia radicum* are present in the different treatments.

Preliminary data is suggesting that the levels of parasitism are similar in treatment plots and control plots. This is good news for producers as it's beneficial to have the natural enemies protected for control of subsequent generations of a pest.

For the 2026 growing season, the research team is planning to repeat chemical control trials and considering a trial in another part of Canada. For the British Columbia trials this will be the third year of data.

### KEY TAKEAWAYS:

- Tools tested provide reduction in root maggot damage on roots for three weeks in earlier plantings of brassica crops.
  - With later season plantings, pest pressure increases with no reductions in damage compared to the untreated control.
- Preliminary data is showing that the levels of parasitism are similar in treatment plots and control plots.



Cabbage root maggot field plot trials at Abbotsford, B.C. Photo: Toban Dyck



A test strip with cabbage root maggots on it. Photo: Toban Dyck



Cabbage plant plots at the Agriculture and Agri-Food Canada Agassiz Research and Development Centre. Photo: Toban Dyck





## Greenhouse Vegetable Research Activities

The greenhouse vegetable sector has two research activities with the Canadian AgriScience Cluster for Horticulture Cluster 4. These two activities are focused on protecting vegetables against pests and managing disease in tomatoes.

THE CLUSTER 4 GREENHOUSE VEGETABLE RESEARCH ACTIVITIES ARE:

### ACTIVITY 9

#### Developing a systems approach to pest management on greenhouse vegetable crops: mirid predator selection

LEAD RESEARCHER – Roselyne Labbé, research scientist in greenhouse entomology with Agriculture and Agri-Food Canada at the Harrow Research and Development Centre

### ACTIVITY 10

#### Novel approaches for the management of tomato brown rugose fruit virus (ToBRFV)

LEAD RESEARCHER – Aiming Wang, research scientist with Agriculture and Agri-Food Canada at the London Research and Development Centre

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## Developing a Systems Approach to Pest Management on Greenhouse Vegetable Crops: Mirid Predator Selection



LEAD RESEARCHER

**Roselyne Labbé**

Research scientist in greenhouse entomology with Agriculture and Agri-Food Canada at the Harrow Research and Development Centre

To find new integrated pest-management strategies to protect greenhouse vegetable crops, a research team is studying two native North American mirid species: *Dicyphus discrepans* and *Dicyphus famelicus*, and one adventive species, *Nesidiocoris tenuis*.

Researchers have been focused on breeding genetically improved strains of the native mirid species *Dicyphus famelicus*, which appears to be one of the predominant species of the *Dicyphini* tribe in natural ecosystems across eastern Canada and has a broad genetic diversity. Two other native predator species, *Dicyphus discrepans* and *Dicyphus hesperus*, are being assessed for their comparative biocontrol potential of common greenhouse pests, as well as if they're prone to causing fruit injuries.

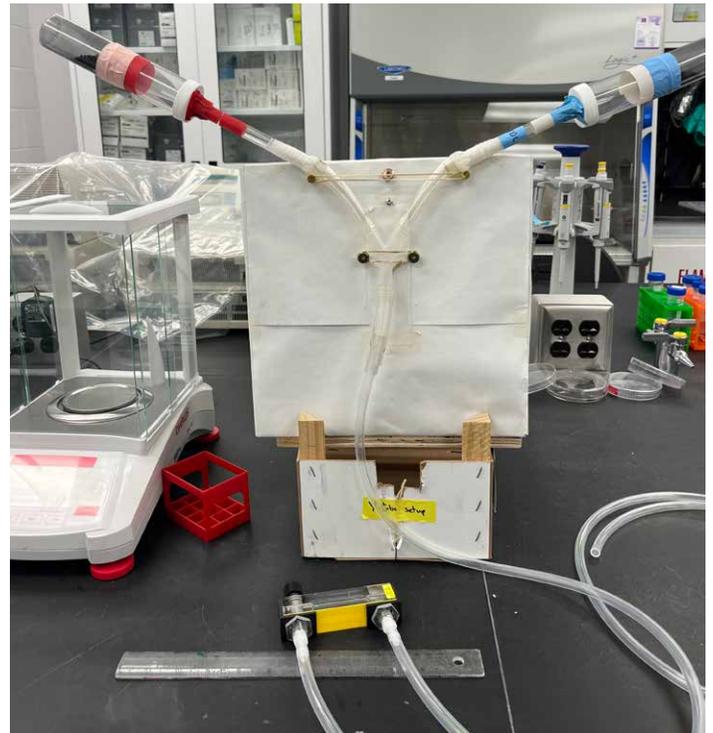
In 2025, the research team characterized the genetic variation of *D. famelicus* predators from three new sources collected in 2024. However, given these didn't represent new genetics, the researchers have proceeded with continued work to characterize existing isolines.

Over the past year, the researchers completed assessment of oviposition preference of predators on tomato, cucumber and sesame (*Dicyphus hesperus* and *N. tenuis*). The research team is assessing the potential of predation among native mirids and *N. tenuis* along with the effects of a multi-predator environment on plant distribution preferences.

Tests this winter examining intraguild interactions among four mirid species showed low overall levels of intraguild predation, with two significant cases: *Dicyphus famelicus* consumed 18 per cent of *D. hesperus* nymphs, and *D. hesperus* consumed 13 per cent of *Nesidiocoris tenuis* nymphs. These results suggest multiple mirid species can likely be released together without compromising biological control, but native species are unlikely to suppress the exotic *N. tenuis* through competition.



A greenhouse trial of mirid host preferences. Photo: Isabella Nardone



A mirid prey attraction assay. Photo: Isabella Nardone





Greenhouse trials in summer 2025 confirmed low intraguild predation between species and provided insight into plant and oviposition preferences. Both *D. hesperus* and *D. famelicus* adults strongly preferred mullein over tomato, while *N. tenuis* used both plants more evenly. Vertical positioning on tomato plants showed little pattern except for *D. famelicus*, which preferred the middle and lower sections when alone.

Oviposition patterns varied by species. *D. hesperus* consistently preferred mullein, *D. famelicus* showed no plant preference, and *N. tenuis* typically preferred tomato – except when paired with *D. famelicus*, then it shifted to mullein. Vertical oviposition on tomato was generally uniform, aside from *D. famelicus*, which favoured the middle of the plant. These details on mirid species distribution on different host plants can help researchers understand how likely species are to have either positive or negative interactions.

The research team is planning to acquire information on mirid species prey preferences through olfactory

preference trials. These trials will provide essential information for each mirid species related to their ability to locate pests through volatile and olfactory cues.

#### KEY TAKEAWAYS:

- The research team characterized the genetic variation of *D. famelicus* predators from three new sources, but as they didn't represent new genetics, the researchers have proceeded with continued work to characterize existing isolines.
- Researchers have found that multiple mirid species can likely be released together without compromising biological control, but native species are unlikely to suppress the exotic *N. tenuis* through competition.
- Vertical positioning on tomato plants showed little pattern except for *D. famelicus*, which preferred the middle and lower sections when alone.





## Novel Approaches for the Management of Tomato Brown Rugose Fruit Virus (ToBRFV)



LEAD RESEARCHER

**Aiming Wang**

Research scientist with Agriculture and Agri-Food Canada at the London Research and Development Centre

Researchers are working to stop Tomato Brown Rugose Fruit Virus (ToBRFV) from threatening Canadian greenhouse tomatoes and peppers. This research activity is studying the infection process and working to develop novel genetic resistance to ToBRFV. Researchers want to better understand how ToBRFV overcomes broad-spectrum resistance given by Tm-22 and bring back Tm-22-mediated resistance to ToBRFV.

To understand ToBRFV genetic diversity, researchers have collected and analysed over 300 samples from greenhouse tomatoes in Ontario and Quebec since the research activity started. They've sequenced and assembled the full-length genome sequences of 40 isolates. The research team combined these sequences with other Canadian ToBRFV genomes previously deposited in the public domain and conducted phylogenetic analysis.

Through computer-assisted comparison analyses, researchers have found that the genome sequences of Canadian isolates share high sequence identity when the movement protein (MP) is least conserved. At the genome level, most Canadian isolates are closely related to isolates from the United States and Mexico. However, several Canadian isolates appear distantly related, suggesting multiple introductions to Canadian production systems. This explains the difficulties and challenges in preventing ToBRFV spread and the unusual ability of ToBRFV to adapt to novel and existing resistance genes.

The research team has collected 25 samples from greenhouse tomatoes in British Columbia. They will do a molecular analysis of them over the next year.

Researchers have completed over 50 trials by screening about 20,000 tomato individual plants from the mutant population and have identified over 30 lines that showed resistance/tolerance to ToBRFV. The research team has started breeding work for next



A tomato plant infected with Tomato Brown Rugose Fruit Virus (ToBRFV). Photo: Aiming Wang

generation mapping to identify genes responsible for resistance in two identified resistant lines. In addition, they have successfully generated a new mutant population using the Roma tomato cultivar for screening for novel genetic resistance.





Tomatoes at the market showing Tomato Brown Rugose Fruit Virus (ToBRFV) symptoms. Photo: Aiming Wang

#### KEY TAKEAWAYS:

- Researchers have found the genome sequences of Canadian isolates share high sequence identity with MP least conserved. This explains the difficulties and challenges in preventing ToBRFV spread and the unusual ability of ToBRFV to adapt to novel and existing resistance genes.
- The research team has successfully generated a new mutant population using the Roma tomato cultivar for screening for novel genetic resistance.





## Potato Research Activities

The potato sector has three research activities with the Canadian AgriScience Cluster for Horticulture Cluster 4. These three activities are focused on sustainability, soil health and finding new potato varieties for growers across Canada.

### THE CLUSTER 4 POTATO RESEARCH ACTIVITIES ARE:

#### ACTIVITY 11

##### National potato variety evaluation for sustainability, resilience and climate change

LEAD RESEARCHERS – Erica Fava, national potato variety trial coordinator and industry liaison; Jen McFarlane, soft fruits IPM coordinator and research coordinator with E.S. Croconsult; and Katerina Jordan, associate professor at the University of Guelph

#### ACTIVITY 12

##### Regenerative and sustainable agriculture for climate change adaptation and carbon sequestration: rebuilding soil health and increasing crop productivity of Canadian potato production systems

LEAD RESEARCHER – Claudia Goyer, research scientist with Agriculture and Agri-Food Canada at the Fredericton Research and Development Centre

#### ACTIVITY 13

##### Positioning Canada's potato industry for improved sustainable production

LEAD RESEARCHER – Mario Tenuta, senior industrial research chair in 4R nutrient management and professor of soil ecology at the University of Manitoba

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## National Potato Variety Evaluation for Sustainability, Resilience and Climate Change

### LEAD RESEARCHERS

#### Erica Fava

National potato variety trial coordinator and industry liaison

#### Jen McFarlane

Soft fruits IPM coordinator and research coordinator with E.S. Cropconsult

#### Katerina Jordan

Associate professor at the University of Guelph

The national potato variety evaluation is working to boost profits and sustainability for the Canadian potato industry by finding new potato selections with improved productivity, disease resistance and climate resilience. New selections are being compared to currently grown potato varieties across the major potato production areas of Canada.

The Ontario trials have identified new promising potato varieties. F180085-04 is a standout early to mid chip line with high yield and gravity and low sugar levels at harvest. It reduces the likelihood of processors rejecting a crop due to high sugar levels. AG1540 was the highest-yielding late-maturing fresh market line in trials. VF180073-13 is highly resilient, ranking as a top yielder in both the standard and heat-stress trials. This variety allows growers to better manage the risks associated with increasingly frequent summer heatwaves. VF19006-002, AG1601.05, and Kingsman were found to be the strongest dual-purpose varieties for boiling and baking in trials.

The 2025 Ontario growing season trials were harvested and evaluated in the fall, with the research activity currently in the active storage testing phase for the 2025–2026 long-term commercial storage trials. The research team plans to share the comprehensive results of the 2025–2026 storage trials in December this year.

For the Agriculture and Agri-Food Canada (AAFC) trials, the team conducted trials in the major potato production regions of Canada in 2025. Agronomic and yield data were collected at each site as well as the daily weather data and field records. Quality assessments, of fry and chip colour, and boil and bake assessments, have started and will continue through



Potato trials during the 2025 growing season at Agriculture and Agri-Food Canada Harrington Research Farm on Prince Edward Island.

Photo: Scott Anderson

storage. The data from each site is currently being compiled and analyzed.

The AAFC team expects the 2025 data will allow them to evaluate the selections for drought tolerance as the eastern sites were rainfed and had suffered from a major drought during the tuber bulking period. The overall yields were much lower at these sites, which will allow the team to identify selections that outproduced the standard varieties grown in the trials.





#### KEY TAKEAWAYS:

- F180085-04 is a standout early to mid chip line with high yield and gravity and low sugar levels at harvest. It reduces the likelihood of processors rejecting a crop due to high sugar levels.
- AG1540 is the highest-yielding late-maturing fresh market line.
- VF180073-13 is highly resilient, ranking as a top yielder in both the standard and heat-stress trials. This variety allows growers to better manage the risks associated with increasingly frequent summer heatwaves.
- VF19006-002, AG1601.05, and Kingsman were found to have the strongest dual-purpose varieties for boiling and baking.
- The AAFC team expects the 2025 data will allow them to evaluate the selections for drought tolerance as the eastern sites were rainfed and suffered from a major drought during the tuber bulking period.

A potato trial plot on Prince Edward Island on Sept. 4, 2025. The plants were not been top killed, but because of the drought some look like they had been. Photo: Andrea Bizeau





## Regenerative and Sustainable Agriculture for Climate Change Adaptation and Carbon Sequestration: Rebuilding Soil Health and Increasing Crop Productivity of Canadian Potato Production Systems



LEAD RESEARCHER

**Claudia Goyer**

Research scientist with Agriculture and Agri-Food Canada at the Fredericton Research and Development Centre

Regenerative and sustainable agricultural practices (RSAPs) are being studied in several locations across Canada to mitigate soil degradation and loss of biodiversity caused by intensive farming practices and ensure long-term viability of potato farms.

On flagship farms on Prince Edward Island, an increase in plant diversity in the rotation phase was tested this past year. Researchers found that direct seeding of an alfalfa-grass treatment showed greater biomass and soil quality improvements than compared to a conventional practice and alfalfa-grass under seeded in the preceding summer. The direct seeded alfalfa-grass treatment likely provided a nitrogen credit for the 2026 potato crop. The researchers are planning to test reduced nitrogen fertilization rates alongside standard practices for the 2026 potato crop.

At a flagship farm in New Brunswick, researchers have found that plant mixes of timothy, verticillium resistant alfalfa and ryegrass, and of ryegrass, pearl millet and sorghum Sudan grass don't favour nematode growth when compared to a timothy, red clover and ryegrass plant mix. There's a greater abundance of nematodes in soils with low seeding rates of ryegrass, pearl millet, Sudan sorghum grass mix than compared to a high seeding rate of the same mix. This could indicate that a lower seeding rate of the plant mixes is not effective in reducing the growth of nematodes.

The research team has used satellite images in New Brunswick to develop a simple approach to determine field management zones. These images provide Normalized Difference Vegetation Index (NDVI) that shows how green and healthy plants are. By analyzing NDVI images taken over several years, researchers can identify patterns in crop growth. They tested this method on 17 potato fields at the McCain Farm of the Future in Florenceville-Bristol, N.B., using data



(L-R) Tyler Nugent and Thomas Foster harvesting potatoes at the McCain Farm of the Future in Florenceville-Bristol, N.B.

Photo: Claudia Goyer



Sean Whitney bagging potatoes at the McCain Farm of the Future in Florenceville-Bristol, N.B. Photo: Claudia Goyer

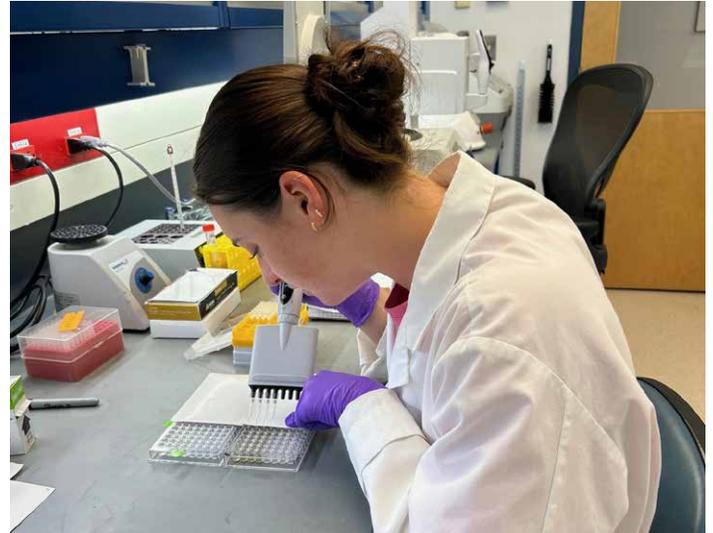




from 2015 to 2023. From 230 satellite images, the researchers created maps dividing each field into three management zones based on their potential for crop production. They compared these zones with actual potato yields and soil tests from 2023. It was found that areas with higher potential had better yields and more nutrients including organic carbon and nitrogen.

#### KEY TAKEAWAYS:

- A direct seeded alfalfa-grass treatment has shown greater biomass and soil quality improvements compared to the grower standard practice, likely providing a nitrogen credit for potatoes.
- Plant mixes of timothy, verticillium resistant alfalfa and ryegrass, and ryegrass, pearl millet, and Sudan sorghum grass reduced nematode abundance when compared to grower standard practice.
- NDVI maps in New Brunswick showed that high NDVI management zones of the fields were linked to greater crop yield and nutrients.



Master of Science student Taylor Austin working in the lab at the Agriculture and Agri-Food Canada Fredericton Research and Development Centre. Photo: Claudia Goyer





## Positioning Canada's Potato Industry for Improved Sustainable Production

### LEAD RESEARCHER

#### Mario Tenuta

Senior industrial research chair in 4R nutrient management and professor of soil ecology at the University of Manitoba

This research activity is studying ways to improve nitrogen use efficiency in Canadian processing and table potato production. The research team is working to determine the environmental and agronomic performance indicators for fresh and processing potatoes in Canada. Emissions efficiency and nitrogen management practices on potato farms across the country are being tested.

Trials are taking place in Alberta, Manitoba, New Brunswick and Prince Edward Island. Researchers added different rates of nitrogen fertilizer to standard varieties of table and processing potatoes and newer suspected higher nitrogen use efficient varieties.

Field activities wrapped up in early October with harvest and post-harvest soil sampling. Since then, the research team has been processing samples.

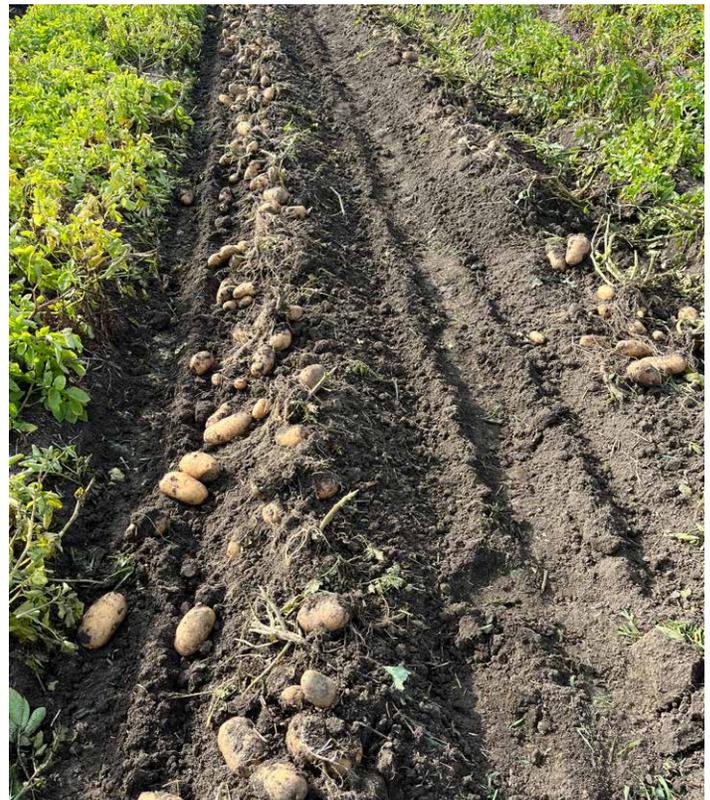
Research to date is showing the test cultivars have superior nitrogen use efficiency than the standard cultivars. Also, nitrification inhibitors are reducing  $N_2O$  emissions, this depends on site and weather conditions during the growing season.

### KEY TAKEAWAYS:

- Test cultivars are being found to have superior nitrogen use efficiency than the standard cultivars.
- Nitrification inhibitors are reducing  $N_2O$  emissions, but this depends on site and weather conditions during the growing season.



Dark Red Norland potatoes ready to be weighed after harvest on Sept. 2, 2025. Photo: Chris Hoffmann



A Dakota Russet potato trial ready for harvest on Sept. 15, 2025.

Photo: Chris Hoffmann





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