Potato Research Activities

There are three research activities that are part of the potato group for 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. Cropconsult; 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

This project is generously funded through the Canadian AgriScience 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.

Sustainable Canadian Agricultural Partnership
Competitive. Innovative. Resilient.

FRUIT & VEGETABLE GROWERS OF CANADA | PRODUCTEURS DE FRUITS ET LÉGUMES DU CANADA

Canada

National Potato Variety Evaluation for Sustainability, Resilience and Climate Change

LEAD RESEARCHERS

Erica Fava
National potato variety trial coordinator and industry liaison

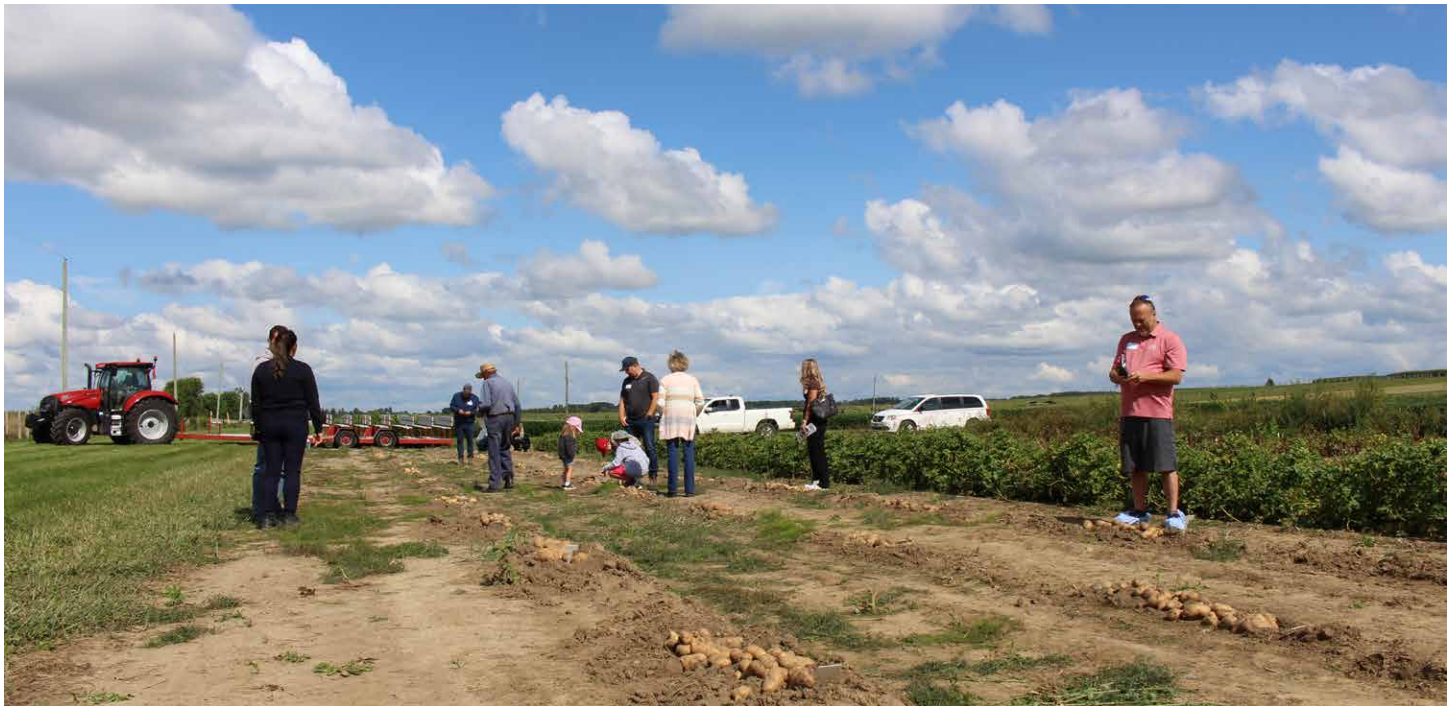
Jen McFarlane
Soft fruits IPM coordinator and research coordinator with E.S. Cropconsult

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.

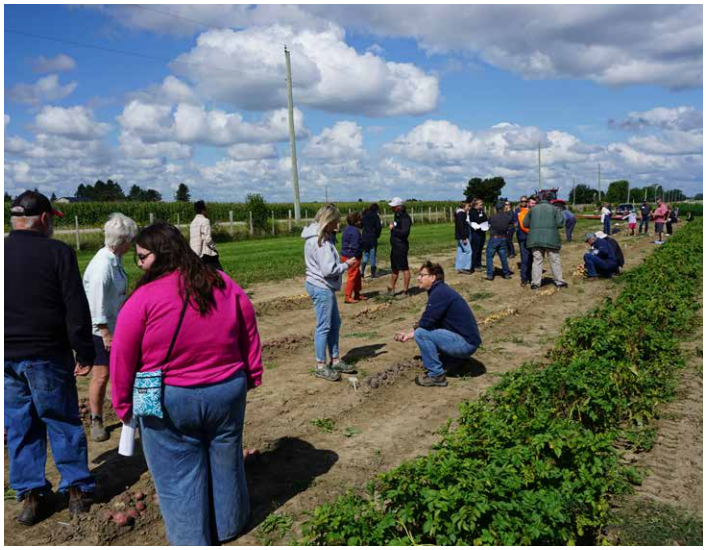
This past summer was the second field season for this cycle of the research activity. Trials were planted and field data was collected. Based on feedback gathered at field days this summer there are some promising selections in the trials.

This growing season was more typical for most areas of the country compared to last year, with the exception being weather during the spring. In the east, it was very dry and much warmer than usual in spring allowing for earlier planting without many disruptions. The plants took more time to get going until the rain started though. In the west, it was a colder spring with more rain than usual in Manitoba. The cold and wet weather somewhat delayed planting.



Attendees at the Elora Research Station in Ontario potato field day on Aug. 21, 2024.
Photo: Ashley Robinson

The 2024 potato variety trials at the Elora Research Station in Ontario. Photo: Ashley Robinson



Attendees look at potato variety trials at the Elora Research Station in Ontario potato field day on Aug. 21, 2024. Photo: Matt McIntosh

KEY TAKEAWAYS:

- Variety trials are done at locations across Canada including Harrington, P.E.I.; Fredericton, N.B.; Benton, N.B.; Simonds, N.B.; Ste-Croix, Que.; Lanaudiere, Que.; Elora, Ont.; Simcoe, Ont.; Winkler, Man.; Carberry, Man.; Outlook, Sask.; Lethbridge, Alta.; Vauxhall, Alta.; and Delta, B.C.
- Four potato lines have graduated from the AAFC program in 2023-2024 cycle and are now in industry trials. These lines have resistance to certain diseases. The four varieties include F160036-02, CV15129-1, F160025-03 and F160032-06.
- This winter, varieties will be tested to confirm resistance to diseases such as golden nematode, potato wart, PVX, PVY, Fusarium dry rot and late blight, as well as for resistance to Colorado potato beetles.
- The potato lines will be tested over winter for the retention of their processing quality through storage and their storage potential over a period of 12 months.

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 bio-diversity caused by intensive farming practices and ensure potato farms' long-term viability.

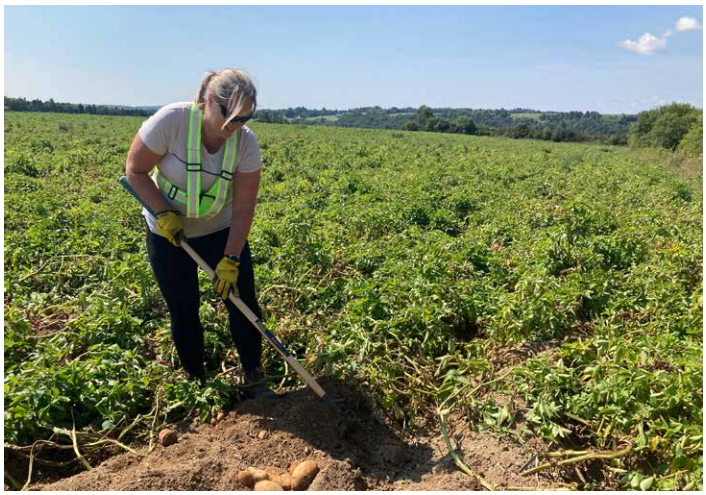
This year, the four experimental hubs consisting of seven fully replicated field sites with a block design were established and maintained. Fifteen flagship farms across Canada also tested different RSAPs similar to the hubs. At the 15 flagship farms, growers are evaluating the challenges and benefits of using RSAPs. The trials at the experimental hubs and flagship farms were successfully established and maintained over the growing season of 2024.

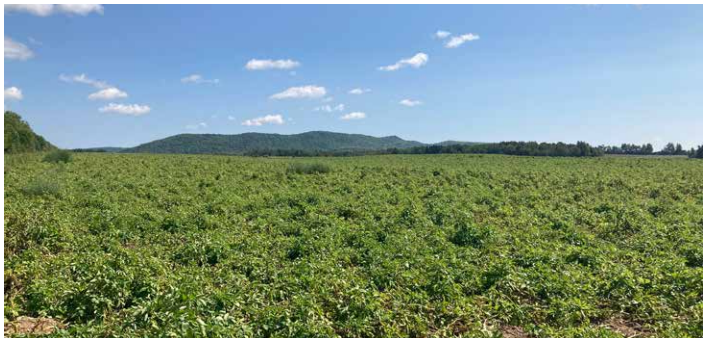
There were several meetings organized to discuss the experimental design, soil sampling protocol and methods of analysis among researchers and industry partners. Other meetings discussed how to perform a global analysis to evaluate the effectiveness of short two-year systems compared to longer term three or four-year systems, and low versus high plant diversity using samples collected in the trials. Plants, soil and gas samples were collected at the four experimental hubs and 15 flagship farms over the summer and fall.

Over the winter, soil and plant analyses will be done on collected samples with the data analyzed.

KEY TAKEAWAYS:

- RSAPs being studied include cover cropping, soil amendments, and livestock grazing.
- The four experimental hubs are located at the McCain Farm of the Future in Florenceville, N.B.; AAFC Harrington Station in P.E.I.; Dolbec Farm in Saint-Ubalde, Que.; Progest in Sainte-Croix, Que.; and Guelph University at the Elora and Simcoe Research Stations in Ontario.





TOP: Claudia Goyer digging potatoes in a field at the McCain Farm of the Future in Florenceville, N.B. in August 2024. Photo: Claudia Goyer, AAFC
ABOVE: A field of potatoes that is almost ready to harvest at the McCain Farm of the Future in Florenceville, N.B. in August 2024.
Photo: Sean Whiney, AAFC

- The 15 flagship farms are located at two farms in P.E.I. led by Ryan Barrett with the P.E.I. Potato Board, one farm in New Brunswick led by McCain Foods, six farms in Quebec and one farm in Ontario led by Andre Gagnon with Fancy Pak, four farms in Manitoba led by Amy Unger with MHPEC and McCain Foods, and one farm in Alberta led by McCain Foods.
- The growing season was good with less rainfall happening in Eastern Canada in 2024 compared to 2023. It was easier to plant crops in the spring as well as reduced scheduling issues between farm operations and scientific activity over the growing season.

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

In this research activity ways to improve nitrogen use efficiency in Canadian processing and table potato production is being studied. Nitrogen fertilizer use is a constraining factor in sustainable potato production and this research is looking for ways to reduce usage.

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 is being studied.

The first field trial season happened in 2024. There were no major issues reported at any of the research sites across the country and researchers are expecting average yields. Results will be released in April and will include agronomic and environmental sustainability indicators. Over the winter samples will be processed with analyses done on them.

KEY TAKEAWAYS:

- Replicated field trials are being done at research sites in Prince Edward Island, New Brunswick, Manitoba and Alberta.
- No major issues were reported at research sites during the 2024 growing season.
- Analyses on samples this winter will include agronomic and environmental sustainability indicators.