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.

Note: The report for Activity 13 – Positioning Canada's potato industry for improved sustainable production will be shared at a later time.

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
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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.

In 2024, industry trials took place in British Columbia, Alberta, Manitoba, Ontario and Quebec. Growers and industry representatives attended field days at most trial locations. Up to 10 common varieties were grown in all trials to allow for a cross-country comparison. Data from the trials are being compiled and analyzed.

In 2024, 10 Agriculture and Agri-Food Canada (AAFC) french fry selections and four standard varieties were grown in field trials in Alberta, Manitoba, Quebec, New Brunswick and Prince Edward Island. Nine AAFC fresh market selections and four standard varieties along with six AAFC chip selections and three standard varieties were grown in field trials in Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and P.E.I. Field days, with a demonstration plot, happened in all provinces as well at a site in B.C. for all three market types. Data from this year's trials is currently being analyzed.

For 2025, industry variety trials are planned for B.C., Alberta, Manitoba, Ontario and Quebec. Common varieties will be selected to allow for comparisons across the country. AAFC trials will be conducted in Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and P.E.I. Selections with positive feedback from the field days and those with promising attributes from the data collected will advance in the commercialization pipeline. The most advanced selections will be offered to industry for field trials.

Harvesting potatoes at the New Brunswick trial site. Photo: Erica Fava

Attendees at the 2024 field day at the Lethbridge, Alta. trial site.
Photo: Erica Fava

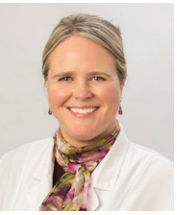
Attendees at the 2024 field day at the Lethbridge, Alta. trial site.
Photo: Erica Fava

KEY TAKEAWAYS:

- In 2024, industry trials took place in British Columbia, Alberta, Manitoba, Ontario and Quebec. Growers and industry representatives attended field days at most trial location.
- In 2024, AAFC trials happened in Alberta, Saskatchewan, Manitoba, Quebec, Ontario, New Brunswick and Prince Edward Island. Field days, with a demonstration plot, happened in all of the provinces.
- For 2025, industry variety trials are planned for British Columbia, Alberta, Manitoba, Ontario and Quebec.

Research plots being dug up for the 2024 field day at Delta, B.C.
Photo: Heather Meberg

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.

At the start of the 2024 growing season, trials at four experimental hubs and 15 flagship farms were established and were maintained throughout the year. Researchers took samples of soil, plant and air throughout the growing season. In the fall, samples were processed to measure soil physio-chemical properties, plant biomass and yield, soil biodiversity and greenhouse gas emissions.

Trials conducted at McCain Foods Farm of the Future in New Brunswick are showing that crop diversity correlates positively with potato yield. There were no increases in soil-borne diseases noted with an increase in plant diversification among the trials in the short term. Preliminary results have shown increasing plant diversity in potato cropping systems raised marketable potato yields and crop resiliency.

KEY TAKEAWAYS:

- Samples from four experimental hubs and 15 flagship farms were processed to measure soil physio-chemical properties, plant biomass and yield, soil biodiversity and greenhouse gas emissions.
- Trials at McCain Foods Farm of the Future have found no increases in soil-borne diseases among the trials in the short term when increasing plant diversification. Preliminary results have shown increasing plant diversity in potato cropping systems raised marketable potato yields and crop resiliency.

Plot preparation for planting cash crops at Simcoe, Ont. crop rotation plots. Photo: Narges Atabaki

Plots after cultivation with potatoes, cash crop and green manure in Simcoe, Ont.
Photo: Narges Atabaki

Biofumigation preparation using rototiller for mixing the topsoil and chopped mustard before compacting in Simcoe, Ont.
Photo: Narges Atabaki

Biofumigation preparation using a mower for chopping the mustard plants at Simcoe, Ont. crop rotation plots. Photo: Narges Atabaki

Plots after biofumigation practices in Simcoe, Ont.
Photo: Narges Atabaki