



Science and Innovation



Potato Research Centre

Fredericton, New Brunswick

The Potato Research Centre (PRC) is one of Agriculture and Agri-Food Canada's (AAFC) network of 19 research centres. The Centre is located on the outskirts of Fredericton, New Brunswick, on the south bank of the St. John River. Potato research is the Centre's main focus as the province of New Brunswick is a recognized world leader in potato production.

In addition to researching new varieties of potatoes for targeted markets, the PRC conducts related studies in pest control with various crops, soil and water management, potato genomics (techniques and technologies for decoding genes), and studies on how best to control the quality of potatoes during and after processing operations.

Using a combination of traditional crop breeding techniques, as well as new and emerging technologies, the Centre releases to the marketplace up to 10 new potato selections each year. These annual releases have been carefully chosen from a starting population that may number 70,000 new seedlings.

The Centre manages a field site at the Senator Hervé J. Michaud Research Farm in Saint-Joseph-de-Kent (Bouctouche) which conducts research on tree fruit, berry and vegetable crops. The PRC also manages the potato breeding substation at Benton Ridge, near Woodstock.

Areas of Research

The PRC develops new varieties and technologies for the production, handling and management of potatoes. One of the Centre's major activities is the *Accelerated Release Program* which offers the potato industry an opportunity for their own commercial evaluation trials of promising newly researched varieties prior to the varieties being fully released to the marketplace

Agri-based Science Solutions for the Environment

- Investigating the nutrient and mineral properties of crops and soils
- Conducting research, in the laboratory and field, on the production of greenhouse gases, soil quality and erosion, and water quality
- Assessing chemical and non-chemical methods for controlling insect pests
- Finding new methods to reduce the use of agri-chemicals (pesticides and fertilizers) to lower production costs and lessen environmental risks
- Understanding the physiological impacts of abiotic stress on apple and berry crop growth and development
- Conducting research on sustainable tree fruit and vegetable production systems, including organics
- Directing a network approach to organic vegetable research
- Generating data to support the registration of much-needed pesticides for minor crops in the context of AAFC's Minor Use Pesticide Program

Leading-Edge Research for Better Products

- Developing new varieties of potatoes with superior traits for Canada's potato industry using traditional and leading-edge technologies
- Developing new methodologies for early detection of viruses in seed potatoes
- Accelerating advanced scientific ways to improve or modify potato plants to protect them from diseases and pests, and preserve their nutritional properties during processing

- Understanding gene mapping of traits and cloning of potato plants with important characteristics needed for processing, disease and pest resistance
- Using gene analysis technologies to identify potato varieties
- Developing economically effective and environmentally beneficial integrated water management systems for wild blueberries
- Conducting innovative research in the field of cold and drought stress physiology in apple and berry crops.
- Understanding how organic vegetable production methods affect soil quality parameters, greenhouse gas emissions, weed populations and crop quality

Facts Figures and Facilities

- 19 scientists and a total staff of 97 (this number includes the Bouctouche staff)
- First commercial potato variety released in 1950. Currently 23 PRC-developed potato releases are in production across Canada and internationally
- Located in the provincial capital, Fredericton
- Two additional field research sites for a total of 645 hectares: The Senator Hervé J. Michaud Research Farm in Saint-Joseph-de-Kent (Bouctouche) and a potato breeding substation at Benton Ridge, near Woodstock, New Brunswick, about 100 kilometres west of the Centre. The PRC and Benton Ridge locations focus on:
 - Field trials for early stage selections from the potato breeding program
 - Various potato-related studies in association with provincial departments, universities and industry associations
 - Watershed studies related to soil erosion control, soil quality, land use and water quality

- Modern laboratory, greenhouse and office complex
- Specialized laboratories for potato quality evaluation; genomics and molecular biology; and soil physical, chemical and biological analysis
- Collaborative linkages with the International Potato Research Institute in Peru and other national potato breeding programs
- Weather-monitoring station, established in 1913, jointly operated with Environment Canada as part of a national network
- Location for the AAFC Potato Gene Repository, a gene conservation program containing Canadian and international potato germplasm which is part of the Department's Plant Gene Resources of Canada
- Potato insect reference collection which includes 32,000 aphid specimens
- Co-located at the Centre are:
 - AAFC regional offices
 - Canadian Food Inspection Agency
 - Provincial offices for New Brunswick Department of Agriculture, Fisheries and Aquaculture

Senator Hervé J. Michaud Research Farm focuses on:

- Alternative cropping systems for insect pest control in cabbage
- Novel over-wintering system for leeks
- New crops for the Maritimes, such as sweet potato varieties with health-promoting phytochemicals
- Development and adaptation of new cultural systems for raspberry production
- Defining the physiological effects of novel organic products for both apples and blackberries

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