



# Science and Innovation



## Pacific Agri-Food Research Centre

### Agassiz and Summerland, British Columbia

The Pacific Agri-Food Research Centre (PARC) in British Columbia is one of Agriculture and Agri-Food Canada's (AAFC) national network of 19 research centres. The Centre consists of two research sites - the location in Agassiz, and a separate facility in Summerland, including the Kamloops Range Research Unit. Research at both sites addresses national agricultural priorities in the areas of horticultural and field crop production and protection including tree fruits, small fruits, greenhouse vegetables, special crops and forages; advanced processing, utilization, quality and safety of plant products; the cellular and molecular biology of plant pathogens; soil resource conservation and land evaluation; poultry production and genetic resources; and dairy cattle behaviour and welfare.

The University of British Columbia's Dairy Education and Research Centre is located on leased land at Agassiz. This co-location has paved the way to increased collaborative research on dairy cattle between the Centre and the University. As well, the University and AAFC collaborate in the preservation and conservation of poultry genetic resources at the Avian Research Centre, also located on site.

### Areas of Research

At the PARC sites in Agassiz and Summerland, British Columbia, major research is conducted on understanding the linkages between food, nutrition and health, securing and protecting food production, and balancing the activities of agriculture with the goal of a sustainable environment.

#### Research for Healthier Crops

##### Agassiz:

- Studying soil biochemistry and fertility, soil microbiology, soil degradation and environmental quality
- Conducting research on insect pest control measures for vegetables, berries and greenhouse vegetables
- Producing strawberry and raspberry varieties that adapt well to Canada's Pacific northwest, with emphasis on natural disease and insect resistance
- Conducting research on innovative production and post-harvest methods to improve the quality of berries and greenhouse vegetables

##### Summerland:

- Studying ways to reduce groundwater contamination from agricultural chemicals; methods to overcome soil and water conditions that are unfavourable to plant growth
- Research on plant viruses through the Canadian Plant Virus Collection which consists of both freeze-dried cultures and live viruses in living perennial plants
- Determining the impact on plant health of beneficial and disease-causing fungi and bacteria
- Developing apple and sweet cherry varieties with a longer harvest season, excellent fruit quality, disease and insect resistance, and the capacity to adapt to the Canadian climate
- Discovering ways to enhance the quality of tree fruits and specialty crops, and more efficient ways to produce and store them
- Controlling plant virus diseases through the use of natural products

##### Agassiz and Summerland:

- Investigating chemical controls, for short-term use, in small-scale production crops minor use products

#### Livestock Welfare and Production

##### Agassiz:

- Assessing behaviour and evaluating the welfare of dairy cattle, including feeding behaviour, detection of lameness and behaviours when sick
- Conducting research in poultry nutrition and assessing nutrition effects in relation to bone strength and welfare
- Identifying, monitoring and preserving poultry stocks for short-term use and long-term availability
- Pasture and rangeland management (Kamloops)

#### Innovative Solutions for Health and Wellness

##### Agassiz:

- Conducting research on greenhouse vegetables to enhance antioxidant content for human health; studying ways to increase the tolerance of these vegetables to low storage temperatures and to prolong their shelf life

### Summerland:

- Identifying and using components from Canadian crops and by-products from food industries to develop foods that promote health beyond their basic nutrients (functional food and nutraceuticals). Investigating these food ingredients to determine antioxidant and anti-inflammatory properties
- Developing new separation techniques such as extraction/fractionation to obtain various components from crops that can be converted and processed into higher-value end products

### Pest and Disease Control

#### Summerland:

- Diagnosing plant viruses to better understand how they replicate so that new diagnostic methods and strategies for disease control can be developed
- Studying the effectiveness of baculoviruses (viruses that kill insects) for possible use as biological pesticides
- Understanding the effects of disease-bearing insects, germs and microbes in fresh fruit and vegetables

### New and Improved Quality for Food Products

#### Summerland:

- Evaluating fruit and vegetable products for taste, texture, appearance and smell (sensory evaluation)
- Distinguishing new and existing cultivars of grapes; profiling the character of Canadian wines; assessing the quality of fruits and vegetables where preservation techniques (such as modified atmosphere packaging) are used to prolong the freshness of the product

#### Agassiz and Summerland:

- Determining factors affecting shelf life and quality of fruit and vegetable products destined for fresh consumption

## Facts, Figures and Facilities

- 56 research professionals and a total staff of 179

#### Agassiz:

- Agassiz location consists of 310 hectares, with a 7.5 hectare field site in Abbotsford, British Columbia
- Modern laboratory and office complex utilizing geothermal storage for heating and cooling

- Poultry research facilities and feedmill; repository of avian genetic resources
- Research greenhouses
- Weather station (data recording since 1889)
- Heritage stone barn (built in 1893)
- Arboretum

#### Summerland:

- Summerland location consists of 320 hectare site, with approximately 90 hectares irrigated and available for research
- Food research pilot plant; sensory evaluation laboratory
- Extraction and fractionation laboratory pilot plant
- Electron microscope and confocal microscope
- Quality control laboratories
- Ornamental Gardens and Museum

#### Agassiz and Summerland:

- Cell culture laboratory
- DNA analyzer
- Geographic Information Systems laboratories
- Insect rearing rooms
- Drainage lysimeter

#### Kamloops:

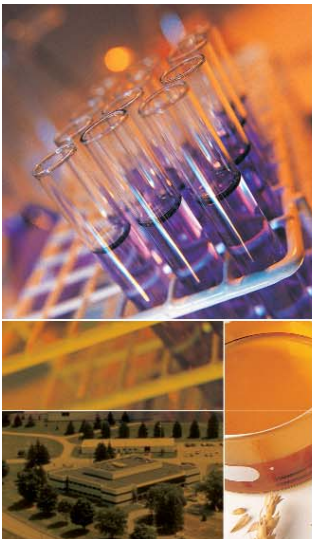
- Kamloops location consists of 57 hectares of irrigated land at the headquarters site used for forage and livestock production
- Kamloops has 500 hectares of deeded forest range at Pass Lake
- Kamloops staff utilize about 40,000 hectares of provincial Crown range through Order-in-Council agreements for research purposes with weather stations located throughout the area
- Kamloops has access to the Lac du Bois provincial park to conduct research trials
- Modern laboratory and office complex containing two laboratories and a herbarium
- Agronomy building which houses phytotrons
- Freezer/drier building for processing samples
- Barn and herd Hereford cow-calf pairs
- Grazing systems for grasslands, forested range, seeded clearcuts and reclaimed mine sites
- Biodiversity of rangelands
- Management strategies to control cattle losses from poisonous plants and bloat
- Effects of rangeland use on soils
- Application of biosolids to reclaim mine sites
- Management strategies to improve water quality

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