



Dairy Research Cluster 4

Research projects
and investments
2023-2028

The fourth Dairy Research Cluster builds on the success of the previous dairy research clusters to provide solutions to improve the **environmental, economic and social sustainability** of the Canadian dairy sector.

Joint industry and government commitments to Dairy Research Cluster 4 total \$13 million, including \$7.5 million from Agriculture and Agri-Food Canada under the Sustainable Canadian Agricultural Partnership AgriScience Program, \$3.24 million from Dairy Farmers of Canada (DFC), \$1 million from DairyGen partners (DFC, Semex Alliance, Holstein Canada and Lactanet), \$795,000 from Novalait and in-kind contributions from dairy sector partners.



Novalait



dairyfarmersofcanada.ca/dairy-research



Theme: Environmental Sustainability

Project

Innovative best management practices to support the Canadian dairy industry in its net-zero goal

The objective of this project is to address all major GHG emission sources and sinks in dairy farming systems (methane emissions from enteric fermentation and liquid manure storage, soil nitrous oxide emissions, and carbon sequestration) as well as farm management efficiencies and economics. This research aims at developing new best management practices to support the Canadian dairy industry in its net-zero goal.

Research team

Andrew VanderZaag, Agriculture and Agri-Food Canada (AAFC) - Ottawa and Claudia Wagner-Riddle, University of Guelph

Chaouki Benchaar, Bernard Goyette, Rajinikanth Rajagopal, AAFC-Sherbrooke; Martin Chantigny, Fadi Hassanat, David Pelster, Marie-Noëlle Thivierge, AAFC-Quebec; Trevor Coates, Stephanie Terry, AAFC-Lethbridge; Marie-Claude Gentès, AAFC-St-Hyacinthe; Louis-Pierre Comeau, AAFC-Fredericton; Robert Gordon, University of Windsor; Édith Charbonneau, Caroline Halde, Marie-Élise Samson, Jean-Pascal Matteau, Université Laval; Alfons Weersink, University of Guelph

Funders

**Agriculture and Agri-Food Canada
Dairy Farmers of Canada**

Budget: **\$2,017,700**

Project

Dairy manure and crop management practices to improve soil health and carbon sequestration

The objective of this project is to establish long-term carbon sequestration values for various dairy manure application practices and identify best management practices for improving soil health and reducing synthetic fertilizer use. This research aims at improving Canadian dairy farms' sustainability and resilience against climate change through improved soil health and carbon sequestration.

Research team

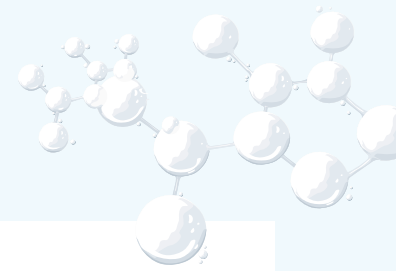
Derek Hunt, AAFC-Agassiz and Jean-Thomas Cornelis, University of British Columbia

Shabtai Bittman, Charita Jayasinghege, AAFC-Agassiz; Kirsten Hannam, Edmund Mupondwa, AAFC-Summerland; Jean Lafond, AAFC-Normandin; Karen Koenig, AAFC-Lethbridge

Funders

**Agriculture and Agri-Food Canada
Dairy Farmers of Canada**

Budget: **\$642,100**



Project

Evaluating extended lactations to reduce greenhouse gas emissions and improve farm efficiency

The objective of this project is to assess the environmental and economic impacts on dairy production systems of extending lactations beyond the traditional 10 months and to develop a decision-support tool for farmers. This research aims at informing management strategies to improve farm efficiency and reduce the environmental footprint of dairy production.

Research team

Timothy Mutsvangwa, University of Saskatchewan

Eric Micheels, Greg Penner, University of Saskatchewan; Christine Baes, John Cant, Jennifer Ellis, Trevor DeVries, University of Guelph; Meagan King, University of Manitoba; Pierre Lacasse, AAFC-Sherbrooke; Filippo Miglior, Lactanet

Funders

Agriculture and Agri-Food Canada
Dairy Farmers of Canada

Budget: **\$738,500**

Project

Improving the environmental impact of dairy production through dairy-beef

The objective of this project is to assess the environmental and economic impacts of incorporating dairy-beef through crossbreeding into dairy farm management. This research aims at offering strategies to reduce the environmental footprint of dairy production while increasing profitability.

Research team

Stephanie Terry, AAFC-Lethbridge and Greg Penner, University of Saskatchewan

Tim McAllister, Karen Schwartzkopf-Genswein, AAFC-Lethbridge; Kim Ominski, University of Manitoba

Funders

Agriculture and Agri-Food Canada
Dairy Farmers of Canada
Canada/Alberta Livestock Research Trust (CALRT; in-kind)

Budget: **\$447,415**

Project

Reducing dairy cattle methane emissions through genetic improvement

The objective of this project is to improve accuracy and efficiency of genomic evaluation and tools for monitoring methane emissions from individual dairy cows, through extensive and continued phenotyping on commercial and research farms. This research aims at improving genomic selection tools for animals with lower environmental impact.

Research team

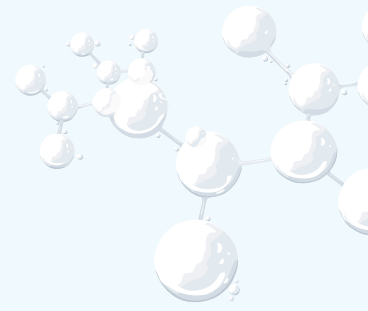
Flavio Schenkel, University of Guelph

Christine Baes, University of Guelph; Débora Santschi, Filippo Miglior, Lactanet

Funders

Agriculture and Agri-Food Canada
DairyGen partners (DFC, Semex Alliance, Holstein Canada and Lactanet)

Budget: **\$1,003,450**



Theme:

Economic Sustainability

Project

Adding lactose, in the form of whey permeates, to dairy rations: impacts on milk properties and rumen function

The objective of this project is to assess the impact of using lactose, in the form of whey permeates as a partial replacement for starch in dairy rations, on milk properties and rumen function. This research aims at improving sustainability and cost effectiveness of dairy production by making use of an important sector by-product through the circular economy.

Research team

Rachel Gervais, Université Laval and Renée Pétri, AAFC-Sherbrooke

Guillaume Brisson, Julien Chamberland, Yvan Chouinard, Éric Paquet, Yves Pouliot, Claude Robert, Université Laval; Kees Plaizier, University of Manitoba; Débora Santschi, Filippo Miglior, Lactanet

Funders

Agriculture and Agri-Food Canada

Dairy Farmers of Canada

Novalait

Lactanet (in-kind)

Budget: **\$620,000**

Project

Creating value out of surplus: an innovative approach to the use of non-fat milk solids

The objective of this project is to develop an efficient and effective method to create liquid dairy protein concentrate for the global food sector. This research aims at enabling scalable production of a high-quality nutritional ingredient from non-fat milk solid surpluses to create a new revenue stream for the industry.

Research team

Guillaume Brisson, Université Laval and Fadi Ali, AAFC-St-Hyacinthe

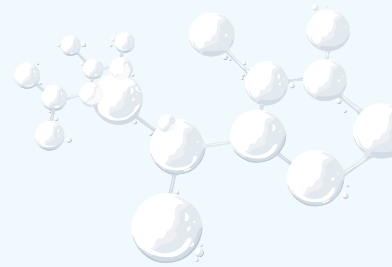
Julien Chamberland, Alain Doyen, Rachel Gervais, Yves Pouliot, Université Laval; Alice Marciniak, University of Guelph

Funders

Agriculture and Agri-Food Canada

Novalait

Budget: **\$499,440**



Project

New tools to improve detection and control of defects in Cheddar cheese

The objective of this project is to identify reliable technological and genomic indicators to predict cheese quality and improve the ability to detect defects during ripening of Cheddar cheese. This research aims at helping cheese manufacturers reduce costs associated with storage of defective cheese products and optimize cheese production.

Research team

Steve Labrie, Université Laval and Marie-Claude Gentès, AAFC-St-Hyacinthe
Sylvie Turgeon, Université Laval

Funders

Agriculture and Agri-Food Canada
Novalait

Budget: **\$500,000**

Project

Impact of milk and yogurt on osteoporosis and obesity in young adults

The objective of this project is to determine the role of fermented (yogurt) and non-fermented (milk) dairy product supplementation in the development of osteoporosis and obesity in Canadian adults aged 19 to 30 years. This research aims at better understanding the impact of dairy products on human health.

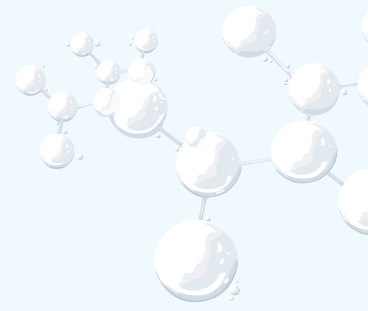
Research team

Hassan Vatanparast, University of Saskatchewan and Sandra Clark, AAFC-Guelph
Adam Baxter Jones, Phil Chilibeck, Marta Erlandson, Walter Siquiera, University of Saskatchewan;
Ginny Lane, University of Idaho (USA)

Funders

Agriculture and Agri-Food Canada
Dairy Farmers of Canada

Budget: **\$902,000**



Theme: Social Sustainability

Project

Detecting detrimental genetics in the Canadian dairy herd

The objective of this project is to develop a national strategy to rapidly identify, understand, and manage detrimental genetic mutations in the Canadian dairy herd. This research aims at improving detection and management of detrimental genetics in Canadian dairy cattle for greater efficiency and profitability.

Research team

Christine Baes, University of Guelph
Flavio Schenkel, University of Guelph; Filippo Miglior, Lactanet

Funders

Agriculture and Agri-Food Canada
DairyGen partners
(DFC, Semex Alliance, Holstein Canada and Lactanet)

Budget: **\$899,990**

Project

The Canadian Dairy Network for Antimicrobial Stewardship and Resistance

The objective of this project is to monitor antimicrobial resistance and benchmark antimicrobial use on dairy farms through the Canadian Dairy Network for Antimicrobial Stewardship and Resistance (CaDNetASR) program. This research aims at offering evidence-based tools and resources to help reduce antimicrobial use, prevent or reduce antimicrobial resistance and enhance animal health on dairy farms.

Research team

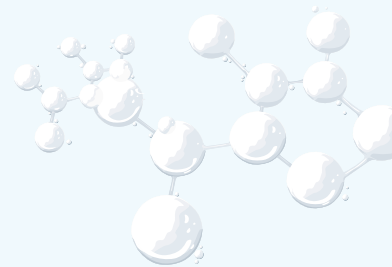
J Trenton McClure, University of Prince Edward Island

Luke Heider, Caroline Ritter, Javier Sanchez, University of Prince Edward Island; David Renaud, Stephen Leblanc, University of Guelph; Simon Dufour, David Francoz, Jean-Phillipe Roy, Université de Montréal; Richard Reid-Smith, Daniella Rizzo, Public Health Agency of Canada; Rhiannon Wallace, AAFC-Agassiz

Funders

Agriculture and Agri-Food Canada
Dairy Farmers of Canada
Public Health Agency of Canada
(in-kind)

Budget: **\$940,000**



Project

Artificial intelligence to optimize bovine mastitis management

The objective of this project is to use artificial intelligence to improve mastitis diagnostic, monitoring methods and management control strategies. This research aims at developing modern tools to support the health and production of dairy cows.

Research team

Simon Dufour, Université de Montréal

Marie Archambault, Pablo Valdes Donoso, Mario Jacques, Jean-Philippe Roy, Juan Carlos Arango Sabogal, Université de Montréal; François Malouin, Université de Sherbrooke; Herman Barkema, University of Calgary; Kevin Wade, McGill University

Funders

Agriculture and Agri-Food Canada
Dairy Farmers of Canada

Budget: **\$445,000**

Project

Selective treatments for bovine mastitis: impacts on animal health, milk quality, antimicrobial resistance, and farm profitability

The objective of this project is to investigate best practices, impacts, and economic benefits of selective dry cow therapy and selective treatment of clinical mastitis in Canadian dairy herds. This research aims at providing practical, evidence-based selective mastitis treatment protocols to responsibly reduce the use of antimicrobials while maintaining animal health and improving dairy farms' bottom line.

Research team

Herman Barkema, University of Calgary and Tim McAllister, AAFC-Lethbridge

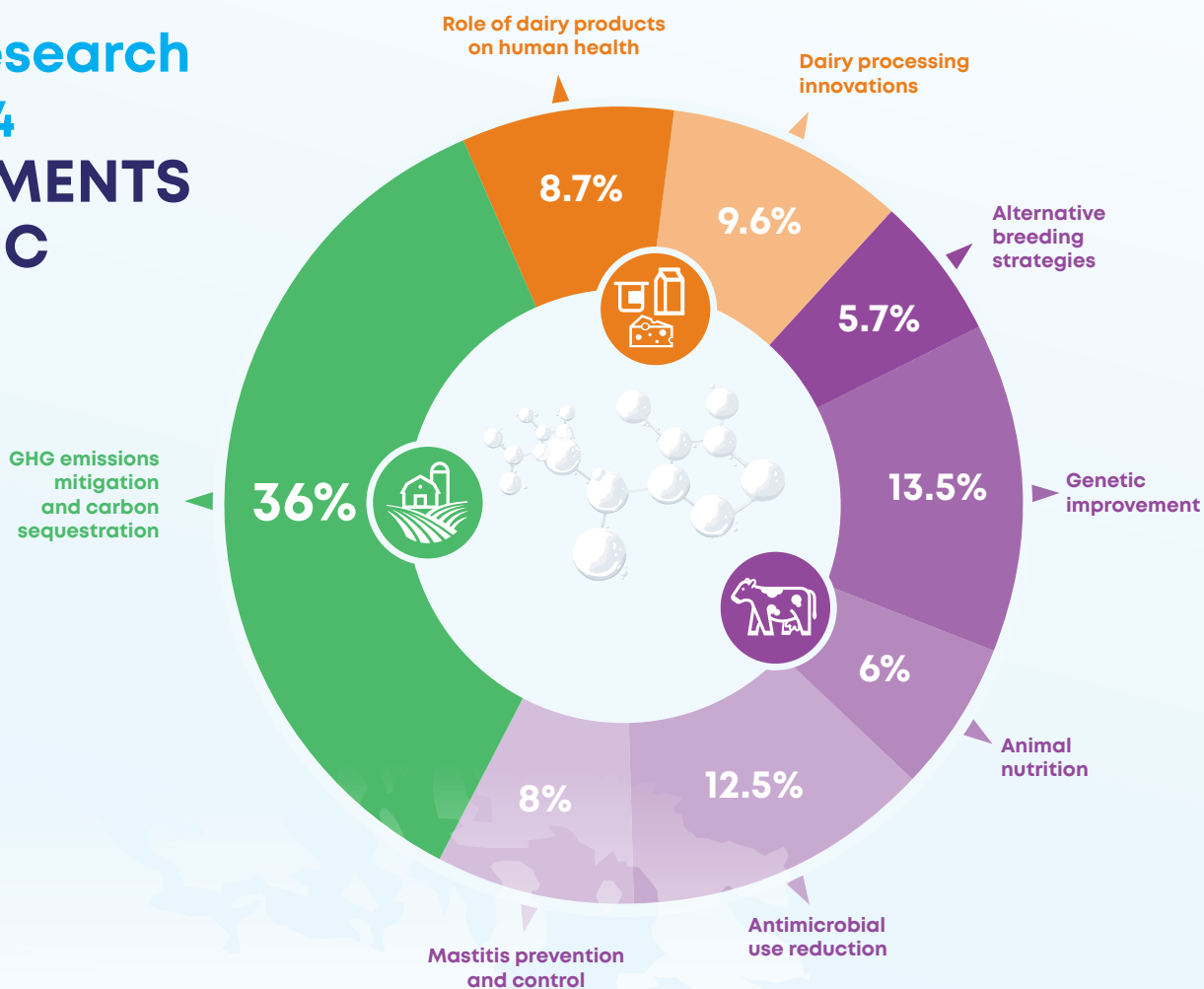
Jeroen De Buck, David C. Hall, Diego Nobrega, Karin Orsel, University of Calgary; Caroline Ritter, University of Prince Edward Island; David Renaud, University of Guelph; Jean-Philippe Roy, Université de Montréal; Richard Reid-Smith, Public Health Agency of Canada

Funders

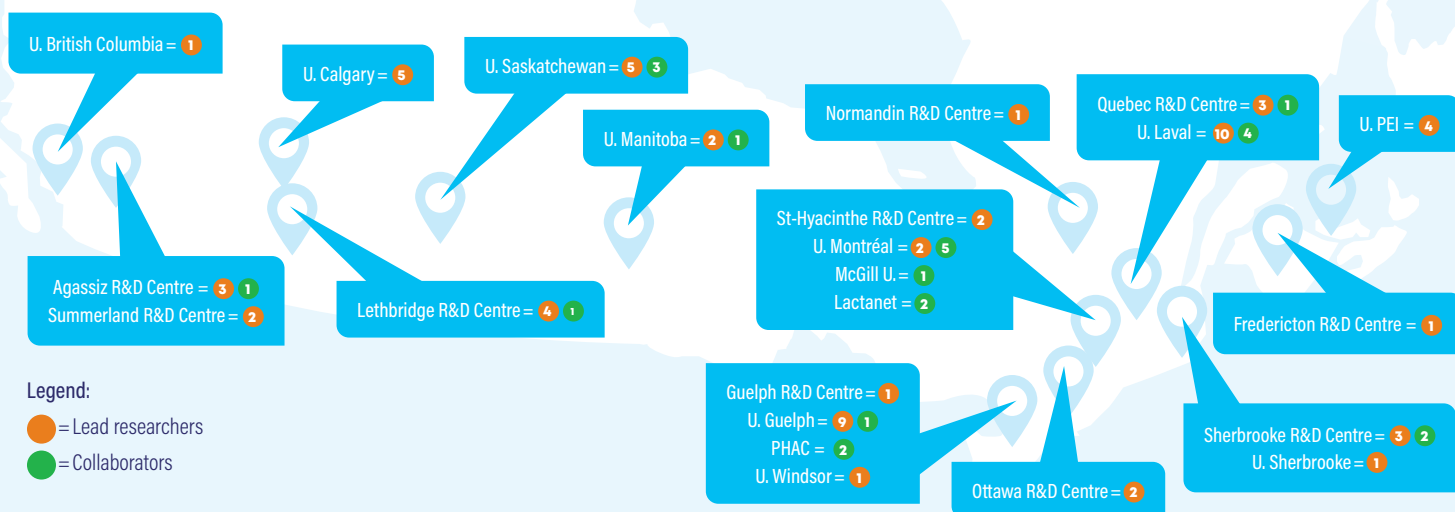
Agriculture and Agri-Food Canada
Dairy Farmers of Canada
Public Health Agency of Canada (in-kind)

Budget: **\$768,000**

Dairy Research Cluster 4 INVESTMENTS BY TOPIC



86 Canadian researchers from 23 research institutions and organizations involved in Dairy Research Cluster 4:*



Legend:

- Orange circle = Lead researchers
- Green circle = Collaborators

*Additional experts, such as international researchers, collaborate on some research activities.