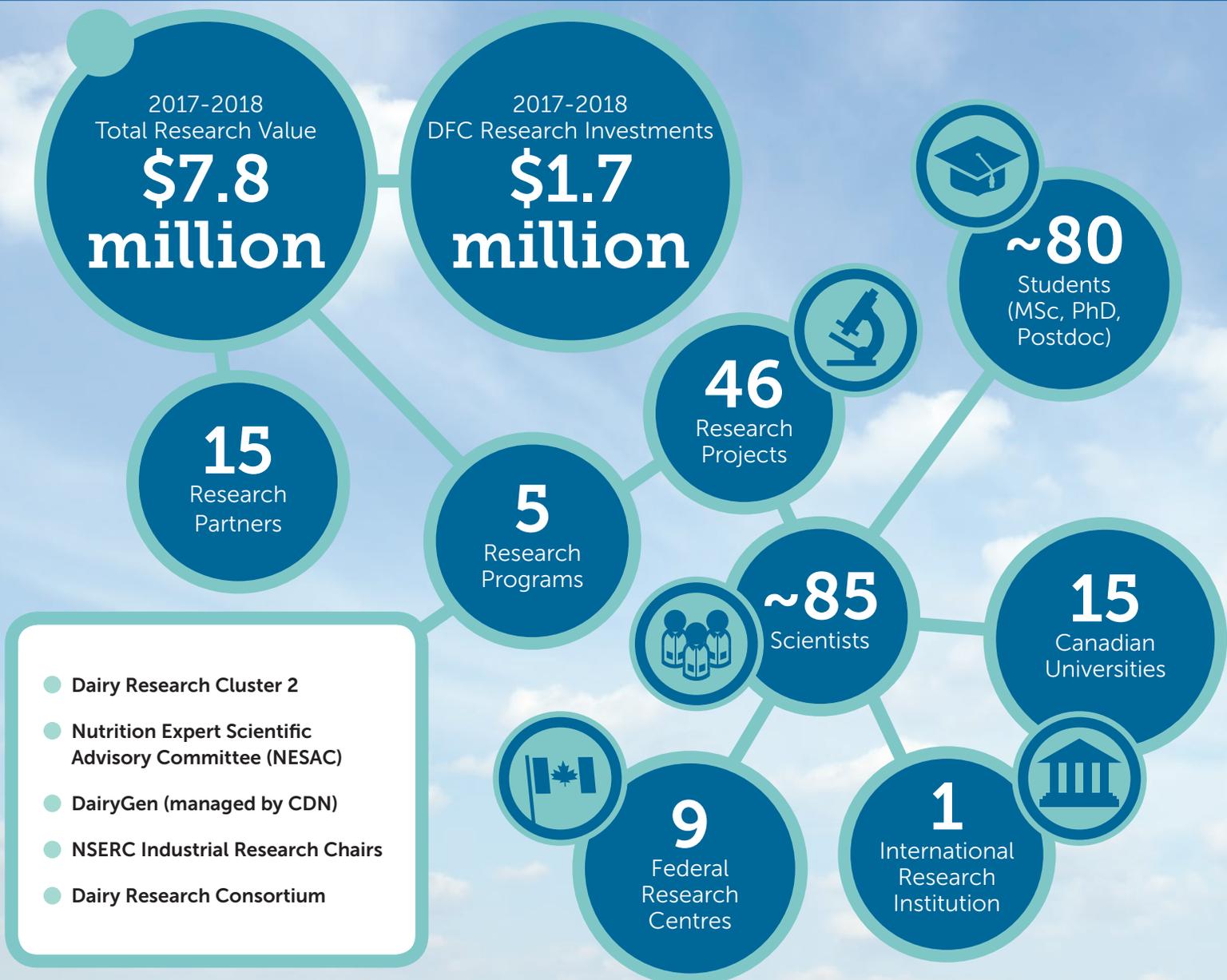


Benefits of research  
investments for the dairy  
sector, the health of Canadians  
and the Canadian economy





## Rapid advances in genetics and genomics research produce tools for farm profitability

- Canadian dairy farmers have immediate access to more accurate national genomic evaluations produced by the Canadian Dairy Network (CDN), providing them with information to select the best bulls and cows for their dairy operations.
- Two powerful tools were developed for dairy farmers to help improve hoof health in Canadian herds: the genomic evaluation for digital dermatitis was launched by CDN in December 2017 and a new management report through Canadian DHI will soon be available for farmers to better manage hoof health.
- A team of Canadian geneticists are using genomics to develop an index farmers can use to select animals that are the most efficient at digesting their feed and the lowest methane emitters.
- New knowledge from research is now laying the groundwork to build on the use of mid-infrared spectroscopy (MIR) and MIR spectral data in the dairy industry to predict fatty acids in genetic selection and as a new indicator trait for other novel traits in development.
- A new reference database of more than 10,000 cows from herds with high quality phenotypes for fertility, survival, health, other key traits, and novel trait phenotypes such as immune response, hoof health, feed efficiency and related traits, and milk spectral data is being used to advance research and development by CDN and the dairy industry in general.



## Canadian dairy farms leading the herd in sustainability

- An award-winning Canadian scientist and her team has better balanced the protein formula used to feed dairy cattle. When implemented in dairy rations, estimates are that Canada can cut its nitrogen emissions by 17,000 tonnes a year and Canadian farms will save \$77.5 million annually.
- Predictions of the effects of alternative feeding strategies on dairy farm GHG emissions were improved, including the identification of key milk fatty acids to predict on farm enteric methane emissions from individual dairy cows.
- A new methane emission factor calculated by a team of scientists demonstrated that Canadian dairy cows emit less  $\text{CH}_4$  than reported in the National GHG inventories. The new factor of 5.79% of  $\text{CH}_4$  energy losses compared to the default factor of 6.5% used by the Intergovernmental Panel on Climate Change, will be the basis for the 2019 National Inventories for the calculation of enteric methane emissions from dairy cows in Canada.
- A dynamic online tool called Dairy Farms + linked with the Canadian DHI database enables Canadian dairy farmers to voluntarily measure and track their farm's environmental footprint, act and apply Best Management Practices to reduce the farm's environmental footprint, meet sustainability goals and evaluate continuous improvement over time.
- Research results can be immediately applied to reduce the water footprint and environmental nutrient loading of dairy farms and provide tools and new knowledge to evaluate and reduce water use and nutrient outflows on any Canadian dairy operation.
- A new web-based decision support tool on the Agrométéo Québec platform was developed and is being tested to help forage producers make informed decisions on the optimal time of cutting timothy forage given its digestibility and yield under climatic conditions.





## Tools and new technologies for more comfortable and healthier cows

- A simplified and practical advisory tool to assess cow comfort was created, reducing usual assessment times by approximately 50% (or about to 3 hours), depending on herd.
- A web-based online benchmarking tool was developed for dairy farmers to compare their scores for each welfare element evaluated and access information and resources to improve their dairy cattle's welfare.
- Quarter-based selective dry cow therapy can now be implemented on farms without negative impacts on udder health to reduce the use of antimicrobials by an average of 60% - a potential costs savings for farmers and improved treatment for better animal health.
- A declaration of invention has been prepared and submitted for the discovery of antibiofilm molecules produced by coagulase-negative Staphylococci (CNS) may lead to a new and innovative tool to control and treat bovine mastitis caused by staphylococci and other Gram positive mastitis pathogens.
- A new economic model developed for the costs of mastitis on Canadian dairy farms indicated substantial losses due to mastitis with median costs of \$662/ cow/year. Total costs for Canadian dairies using year 2014 demographic data were estimated at \$665 million.
- A new mobile application was developed and includes the latest research findings on mastitis costs, treatment and prevention. The mobile application for use by farm advisors and dairy farmers will improve udder health management.
- The National Dairy Study generated the first national baseline statistics for data comparison to other countries that routinely generate similar information (e.g. USA), and facilitates future evaluation of progress or impact of changes in the Canadian dairy industry that might result from external/internal factors or the implementation of programs like proAction.
- Results from research on sustainable reproduction practices can be readily adopted in reproductive programs to improve their efficiency and reduce hormone use, like the use of sensor data to modify/enhance commercial software for fertility prediction and accuracy of real-time reproduction management.
- New knowledge is available to guide management decisions for dairy farmers who have adopted or who plan to adopt automated milking systems to ensure a smooth transition and ensure better herd and hoof health management practices are adopted.



## Strong science-based evidence supports the role of dairy in Canadian diets

- Strong evidence was produced supporting the lack of an adverse association between dairy fat consumption, from cheese and butter, and risk of heart disease.
- Strong evidence has demonstrated the importance of considering whole foods, not just nutrients, as well as their global effects on risk, not just that on LDL cholesterol concentrations when developing dietary guidelines for the population.
- Key findings support the beneficial impact of dairy products (including milk, yogurt and cheese) in controlling appetite (satiety), food intake and post-meal blood glucose levels.
- Scientific evidence shows that dairy and dairy fat consumption might reduce the risk of developing Type 2 Diabetes by improving certain risk factors such as insulin sensitivity, insulin secretion and inflammation.
- New Canadian data demonstrates that diets containing dairy products can reduce the risk of Metabolic Syndrome, Cardiovascular disease and Type 2 Diabetes.
- New evidence shows that milk has antioxidant properties and may protect nutrients from degradation, and that in combination with other foods, these benefits can be further increased.
- New knowledge was provided related to factors associated with biogenic amine levels in Canadian cheese, which is very relevant for Canadian cheese processors and Health Canada in relation to their salt reduction strategy and the implications for cheese.
- Evidence confirmed that dairy products contribute significant amounts of Vitamin B<sub>12</sub> to the diet and are better than vitamin supplements.

**For information: [info@dairyresearch.ca](mailto:info@dairyresearch.ca)**

[www.dairyresearch.ca](http://www.dairyresearch.ca)      [www.dairyknowledge.ca](http://www.dairyknowledge.ca)  
[www.dairyresearchblog.ca](http://www.dairyresearchblog.ca)      [www.dairynutrition.ca](http://www.dairynutrition.ca)

 Dairy Research Cluster [@dairyresearch](https://www.facebook.com/dairyresearch)

 [@dairyresearch](https://twitter.com/dairyresearch)

 Dairy Research Cluster Channel