



Western Dairy Research Collaboration: New Investments in Innovation



The western dairy provincial organizations have formed the Western Canadian Dairy Collaboration (WDRC), to streamline the investment of producer dollars in research and maximize the impact of innovation and benefit for producers in the west. The Western Research Producer Working Group includes two producer representatives from each province who review all proposals for industry relevance and alignment with western research priorities.

While several of the projects with WDRC committed funding are still waiting for co-funding decisions from external partners, the projects below are underway.

Animal Health, Care, & Welfare

Treated Whole Canola Seed for Lactating Dairy Cows

Project Lead: **Dr. Greg Penner (University of Saskatchewan)**
Duration: **2.5 years** Co-funders: **RDAR, Sask Oilseeds**

Summary: The project will investigate the treatment of whole, heat damaged and green canola seeds with calcium hydroxide to increase the concentration of rumen protected fatty acids. The aim is to validate a practical on-farm process to generate a cheaper supplemental fat ingredient that can replace other more expensive fats. Also, it may provide alternative uses for downgraded canola to improve profitability for canola growers.

Comparing Winter Cereals as a Source of Silage

Project Lead: **Dr. Greg Penner (University of Saskatchewan)**
Duration: **3 years** Co-funders: **RDAR, KWS Seeds Canada**

Summary: The project investigates the use of fall-seeded winter cereals for early spring silage to help producers optimize inventory, moisture use, forage yield, and soil protection. Feed intake, digestibility and milk production for cows fed winter cereals as a partial replacement for barley silage will be measured. The aim is to equip dairy producers and advisors with key performance and economic data to guide the use of winter cereals.

*project does not include a funding contribution from BC Dairy

Enhancing the Sustainability of the Dairy Industry Using Oil Seeds

Project Lead: **Dr. Emma McGeough (University of Manitoba)**
Duration: **1.5 years** Co-funders: **Manitoba S-CAP, Manitoba Crop Alliance**

Summary: The project investigates the use of flax, camelina and sunflowers as an alternative protein source. Lab work will be conducted to evaluate nutritional performance of each ingredient and determine ideal inclusion rates, and an economic assessment will determine margin over feed costs. The aim is to provide dairy producers and their advisors with science-supported, local, and more affordable feed ingredient alternatives that will help reduce risks during

periods of limited availability or when prices fluctuate.

Maplify: Improving Diagnostic Sensitivity for Johne's Disease

Project Lead: **Dr. Jeroen De Buck (University of Calgary)**
Duration: **3.5 years** Co-funders: **RDAR**

Summary: Current tests used to detect Johne's disease are slow, costly, and lack sensitivity to detect the disease in its early stages. This project investigates the use of engineered viruses (phages) to target Johne's causing bacteria and produce a signal to significantly improve bacteria detection. Earlier identification of shedding animals will greatly reduce the spread and prevalence of Johne's disease.

Improving Fertility from Sensor Technologies

Project Lead: **Dr. Ronaldo Cerri (UBC)**
Duration: **4 years** Co-Funders: **DFC, Nedap, Afimilk, NSERC Discovery**

Summary: The project investigates the use of artificial intelligence to optimize data from behaviour sensing technologies to improve reproductive decision making and long-term genetic improvement. Data will be used to predict optimal estrous events associated with higher fertility, to evaluate impacts on synchronization protocols and to generate digital traits to include in genetic evaluations. The aim is to use on farm data effectively to improve fertility outcomes.

health, support milk quality, and reduce antimicrobial resistance.

Dairy Farm Sustainability

Rumen Microbiome Solutions for Enhancing Feed Efficiency

Project Lead: **Dr. Hooman Derakshani (University of Manitoba)**
Duration: **1.5 years** Co-funders: **Manitoba S-CAP, NSERC**

Summary: This project investigates targeting the rumen microbiome and microbial natural products to shift rumen metabolism to improve feed efficiency and reduce methane production. The aim is to use existing large datasets of microbial species in the rumen to identify microbial natural products that could be developed into probiotic feed additives. These natural feed additives could help cattle gain more energy from the same amount of feed, leading to economic and environmental benefits.

Green Ceramsite to Improve Dugout Water Quality

Project Lead: **Dr. Jinkai Xue (University of Regina)**
Duration: **3 years** Co-funders: **Sask. Agriculture, Sask. Cattle Association**

Summary: Dugouts are a common water source for cattle in western Canada and can contain high levels of contaminants, like pathogens, excess nutrients (phosphorus and sulfates), and organic pollutants. This project investigates the use of ceramsite, a porous byproduct from water treatment plants, to filter and treat dugout water and produce a potential soil additive. The aim is to provide practical, scalable, and cost-effective technology to improve dugout water quality, enhance livestock health and productivity, support environmental stewardship, and provide a nutrient-rich fertilizer.

*project does not include a funding contribution from BC Dairy

WDRC Research Priorities – What's Next?

In early 2026, the WDRC launched its first targeted call for applied research and knowledge translation and transfer (KTT) projects. The objectives for this call were to 1) develop a toolkit of practical prevention and intervention options to reduce the prevalence of hock injuries, and 2) evaluate new and existing strategies to practically reduce the occurrence of cross-sucking in socially housed calves on dairy farms. Project proposals for the targeted call are undergoing evaluation. Development of the next targeted call for research is already underway, focusing on investigating the causes of high individual bacteria count (IBC) in bulk tank milk on western Canadian dairy farms.

WRDC research priorities are guided by the producer working group and by engagement with western producers and farm service providers. The next opportunity to contribute to research and KTT priorities will occur this fall, led by provincial dairy organizations.



Milk Quality, Composition & Processing

Antibiotic Alternatives for Mastitis Treatment

Project Lead: **Dr. Burim Ametaj (University of Alberta)**
Duration: **3 years** Co-funders: **RDAR**

Summary: Antimicrobial peptides (AMP) produced by the mammary gland of dry cows are one of the natural mechanisms used to kill pathogens and control inflammation. This project continues previous work to investigate the use of naturally produced AMPs to kill mastitis-causing pathogens at dry-off. The aim is to provide producers with an antibiotic-free alternative at dry off to prevent mastitis, reduce SCC, improve cow



Milk Quality Trends and Top Troubleshooting Tips

Like most things involved in farming, it can seem simple at first glance. Turn the tractor on, attach the seeder, plant; bring the cows into the parlour, hook up the machines, milk. But when we take a closer look at anything farm related, it is much more nuanced than meets the eye, and this is especially true for milk quality.

Milk Quality Trends

Year over year, the seasonal averages for SCC have followed the same trend but averages are on the rise. IBC averages are less impacted by environmental conditions, and we saw improvement from early to late 2025. In 2026 so far, average SCC has improved, but summer IBC challenges have impacted average IBC.

There are a lot of different factors that can impact milk quality, and without getting too bogged down in the specifics, we looked at yearly IBC average and milking system type, and seasonal SCC levels based on region.

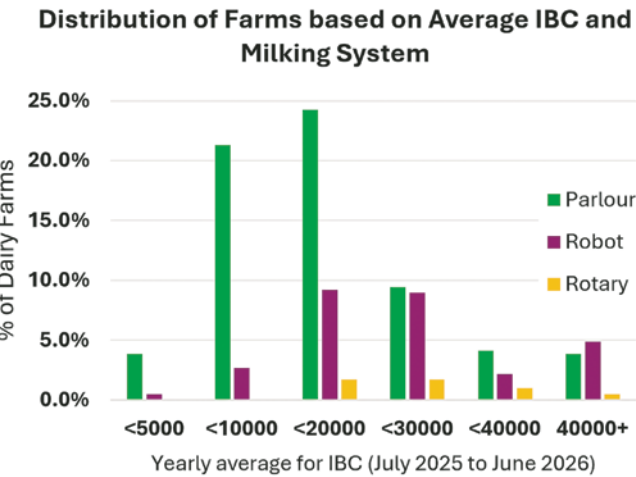
Bacteria

Between July 2025 and June 2026, 83.5% of dairy farms in BC had a yearly average below 30,000. This is excellent news for a province that often boasts about being one of the top provinces for milk quality.

Somatic Cell Counts

There are a lot of factors that can impact SCC – bedding, milking protocols, genetics; all of which can be controlled with equipment and management. Uncontrollable factors such as environmental conditions, however, will play a role in dictating how the factors above can impact a herd, which is why we presented SCC monthly averages based on region. The provincial average for SCC in 2025 was 170,000.

We still have work to do as a province to improve milk quality even further, and below we discuss our top tips for trouble-shooting elevated bacteria counts.



Quality at the Farm Level

Tracking your farm’s milk quality will help you make decisions at the farm level, monitor any trends or changes that are occurring slowly over time, and adjust accordingly.

Individual Bacteria Counts

When raw milk leaves a healthy cow, the IBC is approximately 1000 cells/ml. Increases are due to the raw milk “gathering” bacteria on its journey to the bulk tank due to contaminated milk contact surfaces, and further bacteria growth in the raw milk while the system cools it down to below 4.0° C. This makes milking system cleaning effectiveness and bulk tank cooling efficiency non-negotiable. Environmental cleanliness is also essential to reducing the risks of cross-contamination between the milk house, parlour, or robot room, and internal milk contact surfaces.

What does an effective cleaning protocol look like?

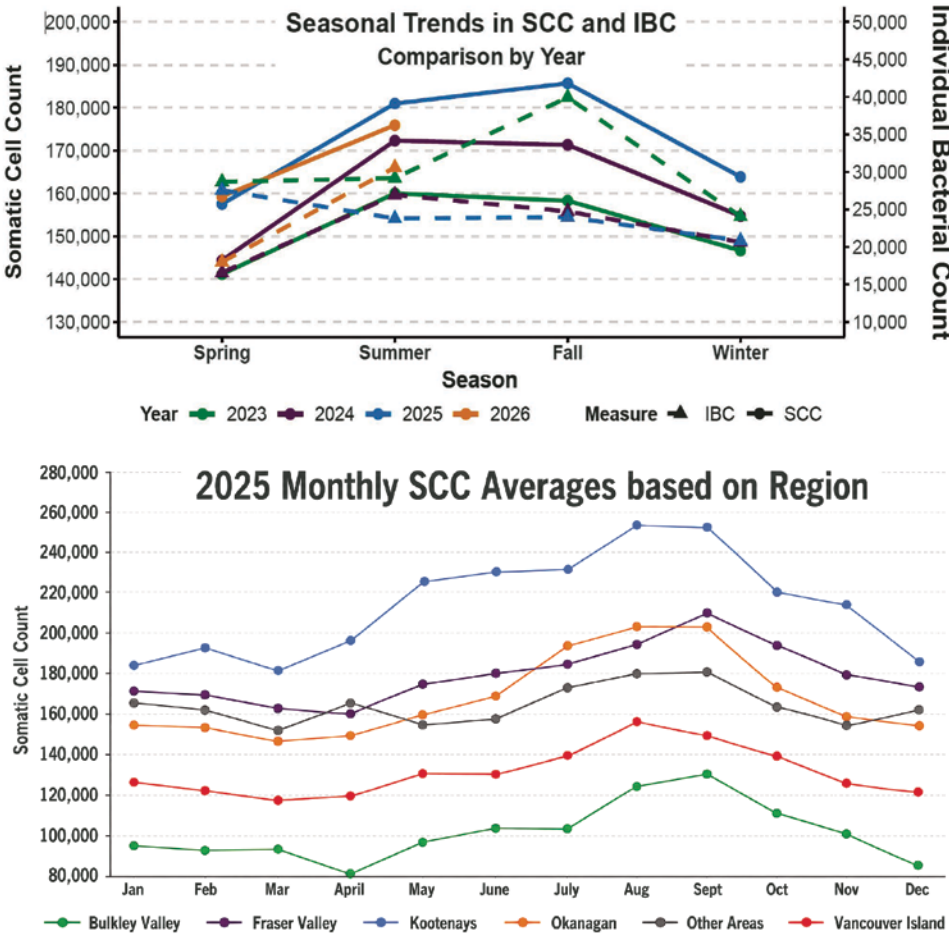
Whether you are operating a conventional or robotic milking system, milk contact surfaces need to be properly cleaned to prevent bacteria from colonizing areas within the system. Cleaning-In-Place (CIP) systems are specifically designed to achieve three levels of cleaning in one automated wash – physical (removal of all visible dirt), chemical (elimination of microscopic residues) and bacteriological (destruction of microorganisms through disinfection).

To do so, the system wash cycle must encompass four critical cleaning stages:

- 1) Lukewarm pre-rinse (32-43°C / 90-110°F)** – The rinse cycle is essential for flushing residual milk and debris out of the milk pipelines that can interfere with the chemical cleaning process. Water temperature is very important for this stage, as too cold water will solidify milk fat inside the milk pipelines, and too hot water will scald the milk onto the milk contact surfaces. The pre-rinse should remove 90 to 95% of milk soils on its own.
- 2) Cleaning “Detergent” phase (71°C / 160°F)**–This is where the chemical cleaning action takes place and air injection into the system is critical to create enough turbidity/scrubbing action to remove any buildup from the milk contact surfaces. Hot water temperature needs to be high enough to activate the detergent and ensure it can effectively clean the system.
- 3) Acid Cycle** – The acid cycle dissolves and removes inorganic mineral deposits, such as milkstone and hard water scale, that alkaline detergents leave behind. It also neutralizes the milk contact surfaces after the chemical wash and creates a slightly acidic environment in the milk pipelines that inhibit bacteria growth.
- 4) Sanitize cycle** – The sanitize cycle acts as a catch all for the system and will kill any bacteria remaining in the system that is exposed to the sanitizer.

When an aspect of the cleaning cycle isn’t up to par, we can start to see bacteria levels increase. Each farm will approach troubleshooting based on their equipment type and function, but generally, we recommend assessing these four areas as soon as possible, especially if your system has initiated an alarm.

- 1 - Hot water temperature and temperature regulation** – Detergent chemicals won’t be effective if hot water temperature is too low. Check your hot water tanks and monitor your CIP wash cycles for your milking systems and the bulk tank.
- 2 - Chemical concentrations** – Ensure that chemical barrels aren’t empty and check injection lines for leaks or airlocks that could be causing chemical imbalances.
- 3 - Air injection** – Scrubbing action is essential for



- complete cleaning. Ensure that air injectors are working well and air leakage from the system is minimal.
- 4 - Bulk Tank Cooling** – Monitor cooling closely during the initial onset to determine if cooling is occurring efficiently. Once cooled to below 4.0° C, co-mingled milk should not increase the bulk tank temperature above 10° C at any time.

It is important to note that some mastitis causing organisms, such as streptococcus uberis, can impact bacteria levels in milk due to their biofilm forming capability. For those unexplainable bacteria results, consider sending a milk sample to the Animal Health Center (AHC) for culturing.

Udder Health

When it comes to udder health, knowing what pathogens are present on your farm, whether in the environment or animal, is essential to preventing and managing infections. In 2025, the Animal Health Lab at MAF had 2312 milk sample cultures come back positive for one or more organism, some of which are mastitis causing. Here are the top six:

- 1) Staphylococcus – 25.7%
- 2) Streptococcus – 16.8%
- 3) Klebsiella – 5.2%
- 4) Corynebacterium – 5.2%
- 5) Prototheca – 4.5%
- 6) Escherichia coli – 4.6%

Contagious mastitis, such as Staph. aureus, is caused by pathogens that survive within the mammary gland of infected animals and are transmitted directly from cow to cow, commonly during the milking process. Strep. uberis, Klebsiella and Prototheca are **environmental mastitis** pathogens commonly found in contaminated water, manure, bedding, soil and feed. Exposure to environmental pathogens generally occurs between milkings.

Identifying mastitis causing pathogens through milk culture can help guide treatment decisions and implement targeted prevention strategies to reduce mastitis and its economic impact. Refer to our follow-up article “So, You’ve Cultured Your Milk, Now What?” on page 70 for tackling different types of mastitis infections.