



**25**

**BEEF CATTLE RESEARCH COUNCIL**

YEARS of Advancement Through Science

**2022-2023 Year in Review**







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# > BEEF CATTLE RESEARCH COUNCIL

## Canada's industry-led funding agency for beef, cattle and forage research and extension

\*This report provides a summary of programs and outcomes of the BCRC's activities between July 1, 2022, and June 30, 2023.

The Beef Cattle Research Council funds leading-edge research and technology transfer activities to advance the competitiveness and sustainability of the Canadian beef cattle industry. All activities are guided by core principles defined by the beef industry in the renewed **Five-Year Canadian Beef Research and Technology Transfer Strategy**.

### OUR GUIDING PRINCIPLES:

- > Increase producer profitability by increasing productivity or decreasing costs of production and risks.
- > Develop, enhance and encourage adoption of beneficial practices and innovations that maximize the environmental benefits industry provides and continue to reduce our environmental footprint, while supporting industry competitiveness.
- > Support continuous improvements in Canadian beef demand through advancements in the quality and safety of Canadian beef.
- > Generate science to inform decision makers, policy and best management practices and to support consumer confidence and public trust.
- > Develop, enhance and encourage adoption of leading-edge technologies that support industry competitiveness, automation and sustainability.
- > Ensure the maintenance and rejuvenation of critical research capacity and infrastructure that facilitate proactive inquiry and innovation to support industry advancement.

### OUR VISION:

A transparent, competitive, resilient and sustainable Canadian beef industry supported by strategic and effective research, technology transfer and innovation.

### OUR MISSION:

To lead the Canadian beef industry as the most prominent supporter of cattle, forage and beef research with a producer-led Council who invest producer funds into research and technology transfer to support growth in beef demand, increase productivity and earn public trust.



# > MESSAGE FROM BCRC CHAIR

Craig Lehr

Change and growth takes time. When I look at the history of our ranch and how things have evolved, it's an incredible—but slow—progression. For example, we used to think a 900-pound steer was finished, and now we don't start finishing them until they're 950 pounds. There's not a single aspect that makes a beef operation successful, but many incremental improvements that happen over time.

Because change happens gradually, we as producers can sometimes forget the role that research has played in the significant advancements in our industry. However, there is no facet of Canadian beef production that hasn't been changed through research and technology transfer.

Since its formation **25 years ago**, the Beef Cattle Research Council has grown into an indispensable organization for Canada's beef producers. The BCRC pinpoints the beef industry's priorities and leverages our producer-paid Canadian Beef Cattle Check-Off dollars to create and deliver resources that help us make informed decisions, improve the bottom line, minimize our risks and build public trust in beef production.

The BCRC has more than 100 research projects under contract at one time. While not all of these may directly result in the development of extension resources for producers, some may inform policy or be an important step in a longer-term industry objective. Others may increase consumer confidence through improved beef quality or food safety. In an effort to increase awareness and understanding of the broader portfolio of research that the BCRC funds, it has launched **quarterly posts** highlighting key research results.

As you browse the research and technology transfer projects in this report, I'm certain you'll be as gratified as I am by the headway that has been made over the past year.



**“The beef and forage sectors have welcomed tremendous innovation in the past 25 years thanks to the many incremental advancements spurred by industry-led research and technology transfer.”**



**WATCH OUR VIDEO CELEBRATING 25 YEARS OF ADVANCEMENT THROUGH SCIENCE AT [WWW.BEEFRESEARCH.CA/25YEARS](http://WWW.BEEFRESEARCH.CA/25YEARS)**





# > MESSAGE FROM EXECUTIVE DIRECTOR

Andrea Brocklebank

It has been a “building year” for the Beef Cattle Research Council. We’ve built a framework for the next five years of research and technology transfer and have used the previous years’ beef research investments to build additional resources, networks and awareness.

Building upon the **Five-Year Canadian Beef Research and Technology Transfer Strategy** developed in 2021, the BCRC has been focused on the development of AgriScience Cluster IV. Between letters of intent, industry and scientific reviews and writing the application, it was a lengthy development process. It culminated in July 2023, when Agriculture and Agri-Food Canada announced \$12.1 million to fund beef and forage projects through March 2028 under three themes: climate change and environment, economic growth and development, and sector resilience and societal challenge. Some of the new projects will explore improved tests and vaccines to manage cattle diseases, new forages that can thrive across Canada, water- and energy-conserving food safety technologies in beef processing facilities and practical, science-based resources and economic decision tools for the industry.

In the 2022-23 funding year, there has been continued focus on expanding the BCRC’s technology transfer outreach through activities that increase awareness and utilize our growing network. Particular effort has been made to collaborate with the Canadian veterinary community to build and modify **tools and resources** that vet teams can use or share with beef clients to improve herd health and profitability, such as the **Calf 911 series**.

The BCRC also partners with other industry groups on projects that support the adoption of best management practices and ensure regionally relevant content is available to producers across the country. A recent example is the expansion of the online forage species selection tool, **Forage U-Pick**, to be bilingual and Canada-wide.

This year we are celebrating **25 years** of advancement through science and more to come!



**“The BCRC continues to build upon 25 years of success by continually demonstrating value to beef producers and the industry through beneficial research and accessible technology transfer.”**



# MEET THE COUNCIL

## Producer-led & Canada-wide

The BCRC is directed by a committee of 16 beef producers from across the country, including one member at large, and is funded primarily through the Canadian Beef Cattle Check-Off.



The 2022-23 Beef Cattle Research Council members include, front row left to right, ex-officio member Nathalie Côté, QC; Vice Chair Ron Stevenson, ON; incoming Chair Craig Lehr, AB; outgoing Chair Matt Bowman, ON, and Finance Chair Fred Lozeman, AB. Back row left to right, Michael Spratt, SK; Jeff Braisher, BC; Dean Manning, NS/Atlantic; Graeme Finn, AB; Melissa Atchison, MB; Ryan Beierbach, SK; Lee Irvine, AB; Trevor Sund, MB, and Darren Bevans, AB. Not pictured are: outgoing member Steven Pylot, SK, and newest members, Lyle Adams, AB, and Roger Meyers, SK.



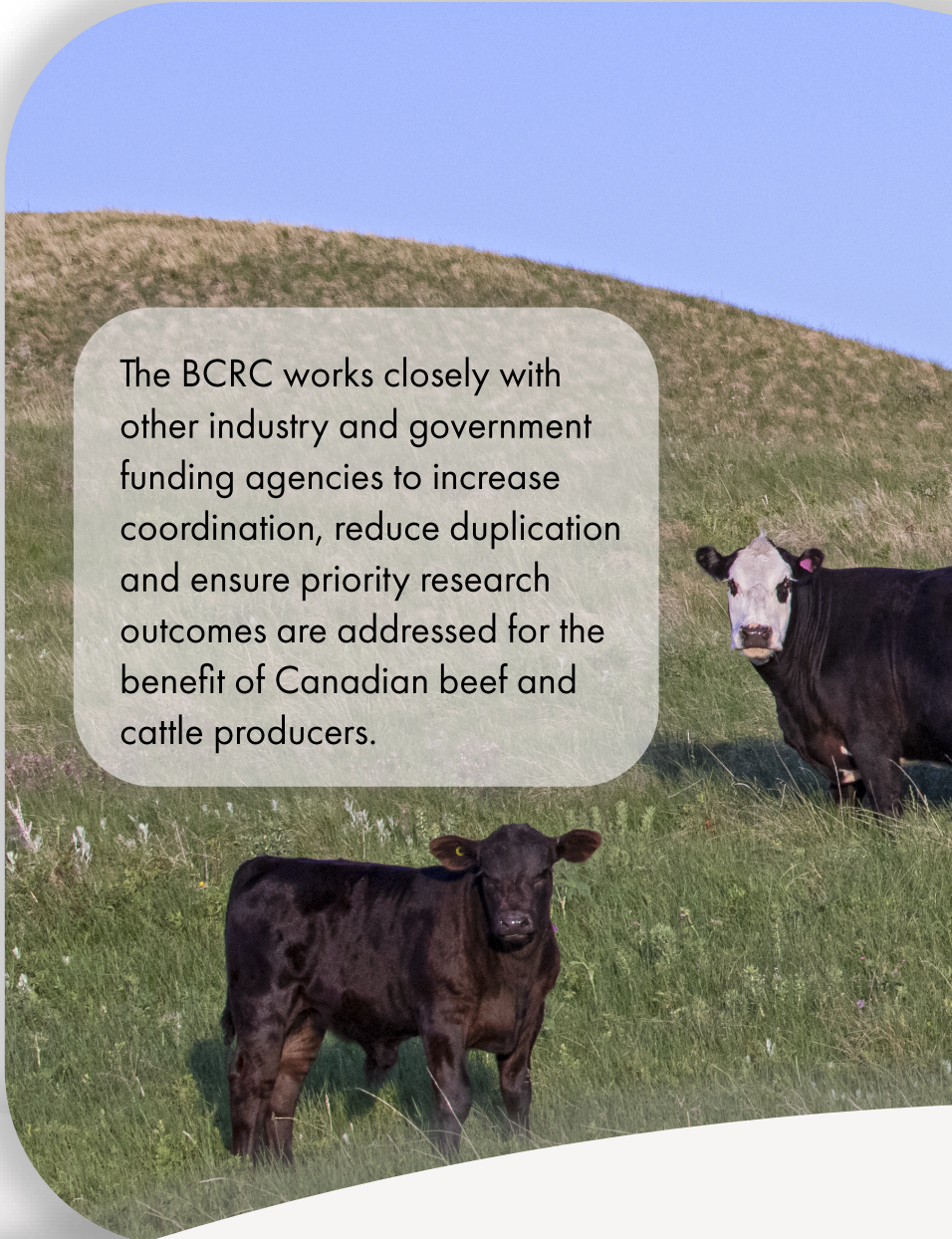
# > THE BCRC & ITS PARTNERS

## Tackling industry priorities and generating the most value from every research dollar

In the 2022-23 fiscal year, the BCRC received on average \$0.67 (unaudited) of every \$2.50 of the Canadian Beef Cattle Check-Off collected by the provincial beef cattle associations. This funding was leveraged under various programs to maximize producer returns on their national check-off investments. Typically, for every \$1 in producer Check-Off invested, the BCRC looks to leverage \$2-3 in other direct funding in addition to indirect leverage through in-kind and other funding.

When making funding decisions, the BCRC seeks expert advice to ensure proposed projects address industry priorities and are scientifically and practically sound. A science advisory body provides relevant advice on the technical merit of any proposed research. As well, independent peer reviewers help ensure new research is original, progressive and uses valid scientific approaches. The BCRC Council members consider this expert advice, priorities in the Five-Year Canadian Beef Research and Technology Transfer Strategy, other scientific and industry feedback and emerging issues before making funding decisions. This process provides a fair, transparent and thorough evaluation of all research activities.

In addition to funding research, the BCRC plays a leading role in increasing industry uptake of relevant technologies through its knowledge dissemination and technology transfer strategies. This information sharing across a broad audience of producers, researchers, funders, government and other industry organizations supports communication networks across the country.



The BCRC works closely with other industry and government funding agencies to increase coordination, reduce duplication and ensure priority research outcomes are addressed for the benefit of Canadian beef and cattle producers.



# > BCRC FUNDING BY PROGRAM AREA

Total Five-Year Funding to All Projects: **\$32.6 Million**

Percent of Total Research Funding by Portfolio:

## Animal Health, Welfare & Antimicrobial Resistance & Use



## Forage & Grassland Productivity

Forage varieties and management strategies to increase yields, nutrition and competitiveness



## Feed Grains & Feed Efficiency

Cost-effective methods for more efficient cattle, feeds and feeding strategies



## Research Capacity

Partnering with key institutions to implement long-term research capacity in priority areas



## Proof of Concept & Other

Testing the feasibility of pursuing larger research projects



## Food Safety

Sustaining beef safety and consumer confidence



## Environmental Sustainability

Reducing the environmental footprint of Canadian beef



## Technology Transfer & Production Economics

Encouraging greater awareness and adoption of new technologies and beneficial practices



## Beef Quality

Maintaining domestic and international satisfaction with Canadian beef





# > BCRC PROJECT FUNDING BY SOURCE

Total Project Funding for 2022-23: **\$10 Million**

**\$4.7 Million**

OTHER INDUSTRY &  
GOVERNMENT FUNDING

**\$4 Million**



**\$1.8 Million**

 AGRICULTURE &  
AGRI-FOOD CANADA

## 2022-23 Allocations

- 22%** Animal Health, Welfare & Antimicrobial Resistance & Use
- 22%** Feed Grains & Feed Efficiency
- 14%** Forage & Grassland Productivity
- 11%** Research Capacity
- 10%** Proof of Concept & Other
- 7%** Environmental Sustainability
- 6%** Technology Transfer & Production Economics
- 5%** Food Safety
- 3%** Beef Quality



# > BEEF SCIENCE CLUSTER

2022-23 Canadian Check-Off Funding:

## \$666,494

The 2018-2023 Beef Science Cluster program was a \$21.7 million program, with Agriculture and Agri-Food Canada contributing \$14.1 million and industry contributing \$7.6 million over the five years. Under the Cluster III program, there were a total of 27 research, technology transfer and science coordination projects — 15 of which reported activities between April 1, 2022, and March 31, 2023. The Cluster III program is now complete.

## PROJECT SPOTLIGHT:

A team led by Dr. Vern Baron has bred alfalfa for winter hardiness and reduced fall dormancy, key traits for withstanding Canadian winters. Starting with two alfalfa varieties known to survive winters across Canada, the team's new varieties have had the same or improved yield and frost tolerance as previous generations. Plants will need to undergo at least four more generations before release, but the project showed there is an ability to select for improved survivability in alfalfa.

## PROJECT SPOTLIGHT:

Drs. Kim Ominski and Tim McAllister led a study to determine the impacts of removing technologies such as implants and feed additives from feedlot cattle diets. They compared data from implanted and non-implanted steers and heifers fed no feed additives, a conventional feedlot diet containing feed additives and other diets containing alternatives such as spices and essential oils. They found the conventional diet had the lowest environmental impact and that removing growth promotants increased land and water use, greenhouse gas emissions and ammonia emissions. This study provided useful scientific and economic data to help inform public trust and policy discussions related to these important technologies.



# > BEEF SCIENCE CLUSTER

## PROJECT SPOTLIGHT:

Dr. Xianqin Yang led a study to determine if *E. coli* is becoming resistant to heat-based food safety treatments that packing plants commonly use to control it. The most heat-resistant *E. coli* strains collected from nearly 1,500 commercial abattoirs and transport trucks were used to inoculate hamburger to see if it could withstand recommended cooking practices. Most strains collected from cattle and beef processing plants remained heat sensitive, indicating heat-based carcass and equipment cleaning practices have not selected for heat-resistant *E. coli*. Because at-home or restaurant cooking heats beef for much longer periods of time, current recommendations to cook ground beef to at least 71°C, and to cook muscle cuts like steaks and roasts to 63°C, are still appropriate.



## PROJECT SPOTLIGHT:

Drs. John Campbell and Cheryl Waldner of the University of Saskatchewan's Western College of Veterinary Medicine led a research team from across Canada assessing the prevalence and impacts of a variety of health issues and management practices on commercial operations. Understanding how these diseases and management practices impact animal health and welfare helps prioritize Check-Off research investments, guide technology transfer efforts and help industry stakeholders and policymakers make informed decisions.



Agriculture and Agri-Food Canada approved 23 projects to be completed by March 2028 under **Cluster IV** with a total investment of \$21.7 million (\$9.6 million from industry and \$12.1 million from AAFC).



# > PRIORITY RESEARCH PROJECTS

2022-23 Canadian Check-Off Funding:

## \$1.25 Million

BCRC's priority research projects are chosen through an annual call for proposals. In 2022-23, the BCRC received 38 letters of intent from research teams across Canada. Of these, 20 teams were invited to submit full proposals and funding was approved for 13 projects in March 2023. All successful applicants are required to secure funding from other government and industry sources, stretching the Canadian Beef Cattle Check-Off dollars to at least twice its value. Several projects approved in previous calls have completed, including the two summarized here.

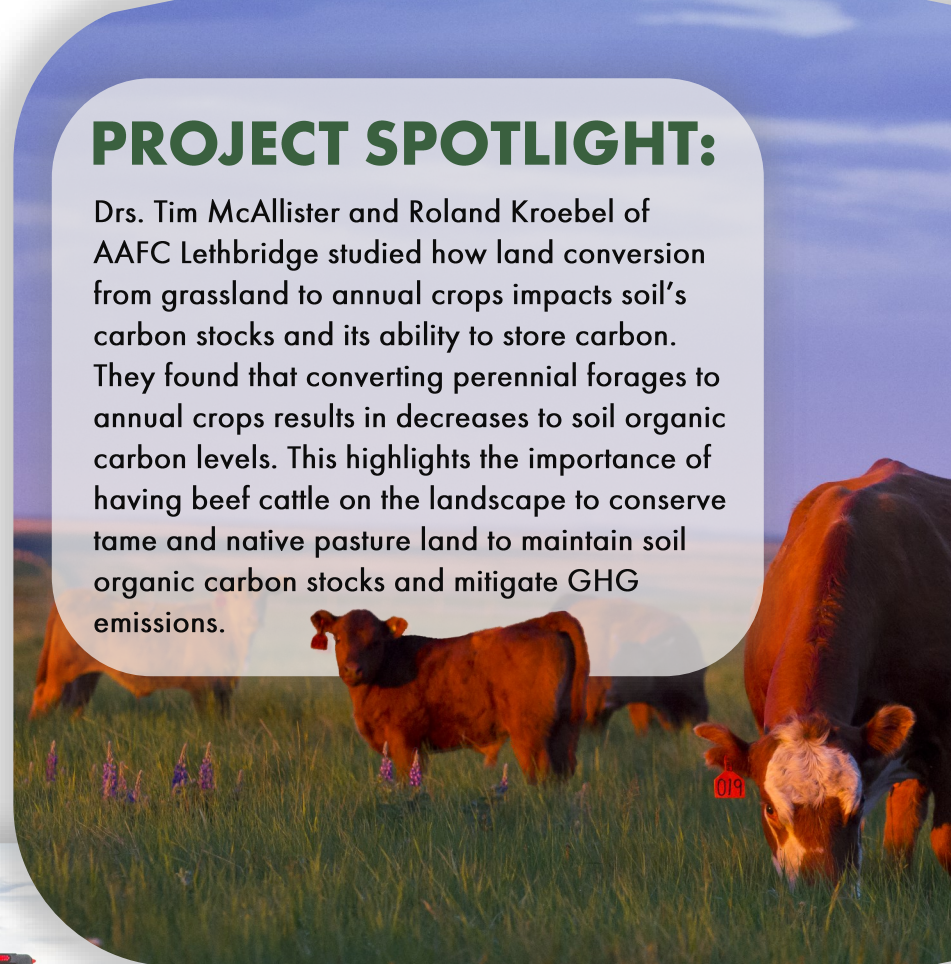
### PROJECT SPOTLIGHT:

Dr. Trevor Alexander and his team from AAFC Lethbridge studied the impact of rest-stops during long-haul transportation on the incidence of Bovine Respiratory Disease (BRD). Transportation is stressful, but so is loading and unloading. This project examined how rests stops affect the respiratory microbiome of cattle. They found calves given an 8-hour rest during long-haul transport had higher numbers of BRD-causing bacteria in the respiratory tract than calves that were not rested during transport. This indicates rest stops might contribute to increased health and welfare risks instead of alleviating them.



### PROJECT SPOTLIGHT:

Drs. Tim McAllister and Roland Kroebel of AAFC Lethbridge studied how land conversion from grassland to annual crops impacts soil's carbon stocks and its ability to store carbon. They found that converting perennial forages to annual crops results in decreases to soil organic carbon levels. This highlights the importance of having beef cattle on the landscape to conserve tame and native pasture land to maintain soil organic carbon stocks and mitigate GHG emissions.



Project summaries are available in the **2022/23 BCRC Results Report.**



# > PROOF OF CONCEPT PROJECTS

2022-23 Canadian Check-Off Funding:

## \$217,654

Funding was approved for five proof of concept projects in 2022-23. These short-term projects help test the feasibility of new or higher-risk research areas before investing in larger, more defined research. These projects are funded jointly by Canadian Beef Cattle Check-Off dollars leveraged with provincial and federal government and/or industry partner funding. Summaries of all proof of concept projects are available in the [2022/23 BCRC Results Report](#).



## PROJECT SPOTLIGHT:

Pink-eye outbreaks can be difficult, time consuming and labour-intensive to treat on pasture. Currently available vaccines are not effective in preventing the disease. A team led by Dr. Philip Griebel of the University of Saskatchewan and VIDO-Intervac explored if changing the delivery method could promote a better immune response and more effective prevention. They used a syringe to administer the experimental vaccine directly onto the eyes of one-month-old calves. This preliminary trial found that a new vaccine that can be delivered like an eyedrop may be a safe and more effective way to protect beef calves against pink-eye.

## PROJECT SPOTLIGHT:

A proof of concept study by Dr. Trevor Alexander of AAFC Lethbridge and Dr. Murray Jelinski at the Western College of Veterinary Medicine studied whether or not water bowls in feedlot pens could be used for antimicrobial resistance monitoring. This preliminary study found that bacteria associated with BRD do accumulate in feedlot water bowls. Water bowls may provide a simpler way to evaluate pen-level antimicrobial resistance in BRD pathogens.



# > RESEARCH CAPACITY

2022-23 Canadian Check-Off Funding:

## \$550,000

The BCRC has developed three research chair positions in partnership with key research institutions and matching industry and government funders. The goal is to ensure long-term research capacity is in place to gain and maintain momentum in priority areas.



**Dr. Bree Kelln**  
University of Saskatchewan  
Beef Industry Integrated  
Forage Management &  
Utilization Chair



**Dr. Gleise M. Silva**  
University of Alberta  
BCRC-Hays Chair in Beef  
Production Systems

## RESEARCH CHAIR SPOTLIGHT:



**Dr. Cheryl Waldner**, University of Saskatchewan NSERC/BCRC Industrial Research Chair in One Health & Production-Limiting Diseases, has spent the last two years exploring critical industry issues such as vaccination practices, trace mineral nutrition, Johne's diagnostics and management, and antimicrobial stewardship. She says the chair position has allowed her more time to mentor graduate students and expand her skills in new areas such as genomics and bioinformatics. Research capacity expanded further as new researcher, Dr. Emily Snyder, was hired to backfill Dr. Waldner's previous position.

"The research chair funding has been invaluable in expanding my research program to explore a variety of questions of direct interest to the livestock industry in a very flexible way," Dr. Waldner says. "I am proud of the research team this program has let me assemble--a talented group of people who are passionate about issues important to the beef industry and who are developing skills to address these issues in years to come."

The University of Saskatchewan recognized Dr. Waldner with its top honour of Distinguished Researcher for 2023.

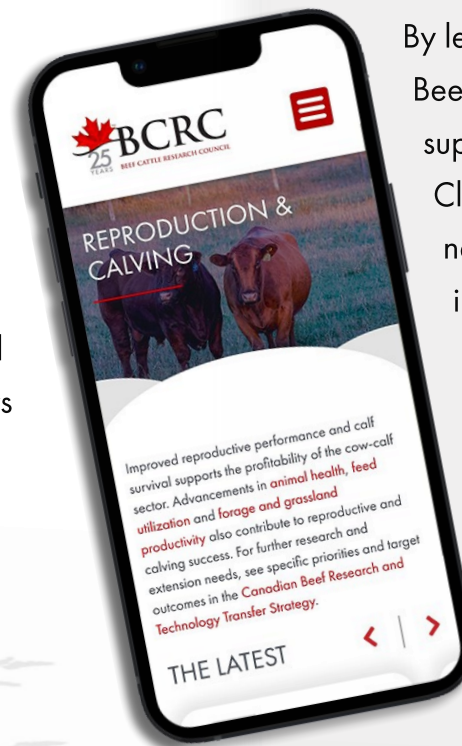


# > KNOWLEDGE & TECH TRANSFER

2022-23 Canadian Check-Off Funding:

## \$282,796\*

The BCRC executes knowledge and technology transfer (KTT) activities, both under and external to the Cluster program. (\*Funding amount above reflects KTT projects that are outside of the Cluster.) All projects are jointly funded by Canadian Beef Cattle Check-Off dollars leveraged with at least 50% funding from government and industry partners. The BCRC uses this funding to develop content, tools and resources aligned with key priorities identified by the industry.



## NEW RESOURCES:

By leveraging producer-paid Canadian Beef Cattle Check-Off dollars with the support of Canada's Beef Science Cluster, the BCRC developed several new resources over the past year, including 68 timely **posts**, 108 **research summary factsheets**, 12 monthly **e-newsletters**, 12 **articles** for Canadian Cattlemen—The Beef Magazine, an interactive **decision-making tool**, 11 **infographics**, five **videos** and seven **webinars**.

Three production-focused topic pages were developed on heifer development, bull management and calving seasons. These new web pages build upon and link to existing content under the general category of **Reproduction & Calving**.



A **new decision tool** launched in June 2022 to compare potential benefits of different testing options for Johne's disease in cow-calf herds. The tool helps industry stakeholders simplify the complex task of managing and monitoring Johne's disease.



# > KNOWLEDGE & TECH TRANSFER

Reaching more than ever before

The BCRC launched a national awareness campaign in 2022-23 to reach beef cattle producers who were not already plugged in to Check-Off funded resources. A series of 25 ad sets covering a variety of topics were placed in digital, social, print and search platforms that generated more than **3.8 million impressions** and **33.7K clicks** to the practical online tools for producers at [BeefResearch.ca](https://www.beefresearch.ca).

Over the past year, this and other outreach efforts have led to a **67% increase** in email subscribers, growing to more than **6.2K subscribers** to the BCRC's regular **posts**.

Social media followers continue to grow, with **12K** on **Facebook**, **8.7K** on **Twitter**, **2.1K** on **Youtube** and a growing following on the BCRC's new **Instagram** account.

Follow on social and scan the QR code to **subscribe** to one of our email lists to be notified about the BCRC's latest content.

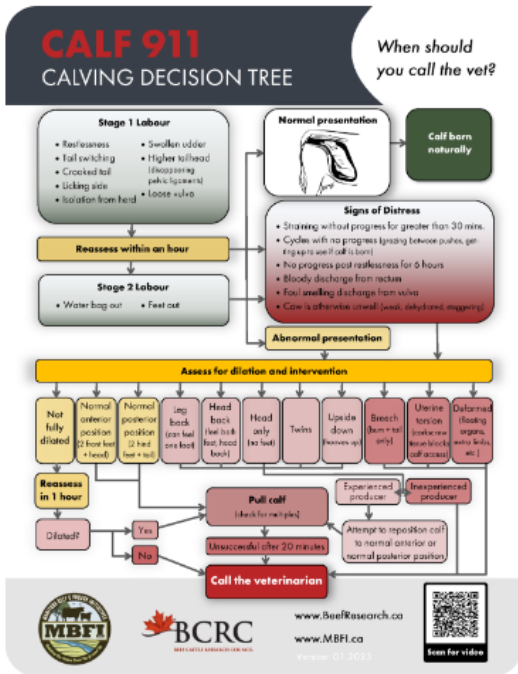




# KNOWLEDGE & TECH TRANSFER

## CANADIAN BEEF TECHNOLOGY TRANSFER NETWORK:

In 2022-23, the Canadian Beef Technology Transfer Network grew to a membership of more than 150 individuals, many of whom participate in an annual meeting to further facilitate communication and collaboration.



One example of this collaboration is the development of a calving decision tree in partnership with Manitoba Beef & Forage Initiatives. This flow chart can help provide step-by-step assessment throughout the calving process. If calving is not progressing normally, the decision tree can help in making informed decisions and aid in communicating vital information to veterinary staff if interventions are required.

Access this PDF and other Calf 911 resources at [BeefResearch.ca](http://BeefResearch.ca).

## PROJECT SPOTLIGHT:

A technology transfer project led by Dr. John Campbell included the development of a series of podcast episodes focused on beef cattle animal health and nutrition with topics ranging from feed testing to vaccinations, extended grazing systems, calving and calf management, disease investigations and economics. Tune in to the **Beef Cattle Health and Nutrition Podcast** on your favourite platform.



# > KNOWLEDGE & TECH TRANSFER

## BEEF RESEARCHER MENTORSHIP:

In 2022-23, five scientists participated in the Beef Researcher Mentorship Program, which engages researchers who study cattle, beef, genetics, feed or forage production with producers and other Canadian beef cattle industry stakeholders. Each was paired with two mentors who helped them develop knowledge, skills and networks through discussions and by initiating various introductions, tours and meetings. Mentees are also provided with a small travel budget to attend relevant industry events.



Since the mentorship program's inception, 35 researchers have participated across a wide range of specialty areas. The program has encouraged development of strong relationships between industry and researchers. Researchers report they have increased confidence and knowledge of industry issues, while industry has benefited from the diverse backgrounds and technical skills new researchers contribute.



## SURVEILLANCE NETWORKS:

The BCRC continued to support priority surveillance networks related to production-limiting diseases and antimicrobial resistance and use. In 2022-23, funding continued for three surveillance projects as well as the **Canadian Cow-Calf Cost of Production Network**. The network supports industry competitiveness with a goal to have Canadian beef cattle cost of production data in every province and ecoregion to guide technology transfer and research priorities.



# > VERIFIED BEEF PRODUCTION PLUS

2022-23 Canadian Check-Off Funding:

## \$450,590

The BCRC continues to fund and oversee the **Verified Beef Production Plus (VBP+)** program. This voluntary, market-oriented and producer-managed program provides training and auditing for animal care, biosecurity and environmental stewardship along with on-farm food safety practices throughout the beef value chain.

**1.7 million** head of cattle and  
**6.4 million** acres are managed by  
**1,360** active VBP+ certified operations

AAFC's VBP+ *Industry and Market Alignment* project completed in 2022-23. The five-year project leveraged \$327,500 in Canadian Check-Off funding, for a total of \$1.3 million when combined with government investment. Activities included establishing equivalency with programs like U.S. Beef Quality Assurance; alignment with the Certified Sustainable Beef Framework production standard; upgrading training, reporting and renewal processes; creating remote auditing and accreditation to the Growth Enhancing Product (GEP) Free program, and exploring certification pathways.

VBP+ has submitted an application for the 2023-2028 Sustainable Canadian Agriculture Partnership program for a project titled *Enhancing VBP+ To Drive Sustainability and Market Growth in the Canadian Beef Industry*. If it proceeds, this project will leverage \$304,000 for a total project budget of \$1.2 million. Outcomes will build on previous project successes and also will include activities to address previously identified gaps and further alignment with complimentary programs.





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