



2023/24 Results Report

Submitted to the Canadian Beef Cattle Research, Market Development
and Promotion Agency

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I. Executive Summary

The Beef Cattle Research Council (BCRC) is a producer-led council that leads the Canadian beef industry by investing producer funds into beef and forage research and technology transfer to increase productivity, support growth in beef demand and earn public trust. To advance a transparent, competitive, resilient and sustainable Canadian beef industry, the BCRC works closely with other industry and government funding agencies and extension teams to support strategic and effective research, technology transfer and innovation.

A division of the Canadian Cattle Association, the BCRC is directed by a committee of 15 beef producers from across the country. The BCRC is funded in part through a portion of a producer-paid national levy, the Canadian Beef Cattle Check-Off. In 2023/24, the BCRC received on average \$0.67 (unaudited) of every \$2.50 of the Canadian Beef Cattle Check-Off collected by the provinces. This funding was leveraged under the Beef Science Cluster program with Agriculture and Agri-Food Canada Sustainable Canadian Agricultural Partnership funding, where industry contributed 42% (\$1.50 million) and AAFC contributed 58% (\$2.05 million) in 2023/24. In addition, the BCRC leveraged the Canadian Beef Cattle Check-Off for an additional \$3.9 million in research funding and \$247,000 in-kind from government and industry partners through initiatives outside of the Beef Science Cluster.

This report covers the period April 1, 2023 to March 31, 2024. Programming during this period was centered around the following areas:

- 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.

Section III (ii) of this report covers projects managed by the BCRC and funded under the fourth Beef Science Cluster. There were 23 research, extension and science coordination Cluster projects reporting activities between April 1, 2023 and March 31, 2024. The first year of the five-year Cluster IV program has now been completed, with first year activities currently under review.

Section III (iii) of this report includes a list of BCRC priority research projects funded by Canadian Beef Cattle Check-Off dollars and other industry investments through the BCRC's annual call for proposals. In 2023/24, the BCRC received 59 letters of intent from research teams across Canada. Of these, 21 teams were invited to submit full proposals, which are due in mid-June. Successful applicants will be required to secure funding from other sources (government and industry), matching the Canadian Beef Cattle Check-Off dollars at a minimum of 1:1. Final funding decisions will be made later in 2024.

Several projects approved in previous calls (2018 – 2022) are still underway or nearing completion. Modelling the effects of nutrient runoff from cattle grazing found that grazing is not the major contributor of nutrient exports in grasslands. The benefits of using annual forages in an integrated crop-livestock system in Western Canada depend on region and weather and diverse annual mixtures improve soil health and quality regardless of livestock grazing. Examining the use of high-moisture corn products found that high-moisture corn products are a good alternative energy source for finishing cattle. Researchers found that the contagious spread of antimicrobial resistant Bovine Respiratory Disease (BRD) pathogens in feedlots is primarily responsible for widespread BRD early in the feeding period. A summary of BCRC research projects, including the project title, factsheet link and budget is included in Section III (iii).

Funding was approved for six Proof of Concept (POC) projects in 2023/24. These are short-term (six months to one year) projects to help inform whether it is worth pursuing a larger, more defined research investment. Evaluating the use of telemedicine in cattle necropsies found an improved chance of reaching diagnosis. Increasing vitamin A supplementation to cows in late gestation found that though there was an increase in marbling in the calves, there was no difference in grade. See section III (iv) for a complete list of the POC projects and preliminary research highlights.

The BCRC continued to support the implementation of long-term research capacity in 2023/24. Three Chairs are currently supported under this program to address industry identified gaps in research capacity: Dr. Bree Kelln, Beef Industry Integrated Forage Management and Utilization Chair (University of Saskatchewan); Dr. Cheryl Waldner, NSERC/BCRC Industrial Research Chair in One Health and Production-Limiting Diseases (Western College of Veterinary Medicine); and Dr. Gleise da Silva, BCRC-Hays Chair in Beef Production Systems (University of Alberta). In 2023/24, two start-up funds were implemented for new researchers. The University of Alberta has hired Dr. Erick da Silva Santos as the Assistant Professor of Forage Production and Management. The University of Guelph is currently hiring for the position of Professor in Ruminant Health Management. See section III (v) for additional details on research capacity investments.

Knowledge and Technology Transfer (KTT) activities continue to advance through the Beef Science Cluster, internal initiatives, the Canadian Beef Technology Transfer Network, and a new initiative for regional extension event funding. The Beef Science Cluster KTT program develops and distributes articles, decision tools, videos, blog posts and webinars. **Eastern content expansion** and **Enhancing extension through veterinary collaboration** are internal initiatives to reach new producers across the county. In 2023/24, the Canadian Beef Technology Transfer Network launched two collaborative projects: water quality management and genetic literacy improvement for producers. Regional workshops in Manitoba provided producer training for the CowBytes Ration Balancing software. Producer peer groups in Saskatchewan are facilitating open discussion of challenges, opportunities and experiences. See section III (vi) for details on the KTT program and project highlights.

The BCRC supports priority surveillance networks related to production limiting diseases and antimicrobial resistance and use. In 2023/24, funding continued for three surveillance projects and the Canadian Cow-Calf Cost of Production Network. See Sections III (vii) and (viii) for details on the surveillance research network and related projects.

The BCRC oversees the delivery of the Verified Beef Production Plus (VBP+) program. VBP+ advances producer training objectives and the delivery of on-farm certification services through VBP+ Delivery Services Inc. See Section IV for an update on the progression of VBP+ programming.

The fiscal year for the BCRC is July 1 to June 30, therefore the BCRC audited financial statements are not included in this report and are available upon request after August 31, 2024. The Canadian Beef Cattle Check-Off funding allocated to research programming in 2023/24 is highlighted in various sections of this report and is projected at **\$5,907,994**.

II. Background

The Beef Cattle Research Council (BCRC) funds leading-edge research and technology transfer activities to advance the competitiveness and sustainability of the Canadian beef cattle industry. In 2023/24, the BCRC received on average \$0.67 (unaudited) of every \$2.50 of the Canadian Beef Cattle Check-Off. This funding is leveraged under various programs to maximize producer returns on their check-off investment. The BCRC leveraged the industry Check-Off dollars with Agriculture and Agri-Food Canada (AAFC) Sustainable Canadian Agricultural Partnership (SCAP) Science Cluster funding in 2023/24, where industry contributed 42% (\$1.50 million) and AAFC contributed 58% (\$2.05 million). Through initiatives outside of the Beef Science Cluster, the BCRC leveraged the Canadian Beef Cattle Check-Off for an additional \$3.9 million in research funding and \$247,000 in-kind from government and industry partners.

As the national beef cattle industry research agency, the BCRC plays an important role in identifying the industry's research and development priorities and subsequently influencing and maximizing the benefits of public sector investment in beef cattle research. The BCRC facilitates and encourages collaboration and coordination among researchers, other funding agencies and industry on provincial and national levels. In July 2021, the BCRC released the updated five-year *Canadian Beef Research Strategy and Technology Transfer Strategy*. This Strategy allows the BCRC, working in partnership with other beef research funding agencies across Canada, to address key research, capacity and extension priorities as identified by producers and industry partners.

In addition to funding research, the BCRC plays a leading role in increasing industry uptake of relevant technologies through the delivery of its knowledge dissemination and technology transfer program. This information is shared across a broad audience of producers, researchers, funders, policy makers and communication networks across the country.

The BCRC is also responsible for the delivery of the Verified Beef Production Plus (VBP+) program, a program developed to educate producers and facilitate on-farm certification of practices related to food safety, animal care, biosecurity and environmental sustainability. VBP+ training and certification are important in supporting industry efforts to demonstrate to downstream supply chain stakeholders and consumers that Canadian beef is produced in a sustainable manner and that maintaining public trust is a priority.

This report covers the period April 1, 2023 to March 31, 2024. During this period, the BCRC's research and extension programming was funded through the Canadian Beef Cattle Check-Off, AAFC under SCAP and other national and provincial industry partners. Programs were centered around the following areas:

- 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.

III. Research Activities

i. Introduction

BCRC research activities supported by the Canadian Beef Cattle Check-Off and other industry and government partners for the period April 1, 2023 to March 31, 2024 are highlighted in this report. During this period, the BCRC provided funding to beef research projects under the Agriculture and Agri-Food Canada (AAFC) Beef Science Cluster program as well as additional projects in multiple other BCRC funding streams, including Priority Research, Proof of Concept & Validation Trials, Research Capacity, Surveillance, and Knowledge and Technology transfer. All research funded by the BCRC is based on specific needs and opportunities identified by the beef industry and addresses priority outcomes from the *Canadian Beef Research Strategy and Technology Transfer Strategy* under program areas relating to Animal Health & Welfare and Antimicrobial Use & Resistance, Beef Quality, Food Safety, Feed Efficiency & Utilization, Forage & Grassland Productivity and/or Environmental Sustainability. The BCRC engages internal and external peer reviewers in the process of selecting projects to fund. Final funding decisions are made by the producer council. All research funded by the BCRC requires that researchers leverage the Canadian Beef Cattle Check-Off by securing funding from other federal, provincial, and/or other industry funding programs on a minimum 1:1 ratio.

As the BCRC's funding profile has grown, BCRC funding is often secured prior to applying for matching funding through other research funding agencies. Confirmed BCRC funding often provides a higher chance of approval through other agencies. This results in a gap of at least 6-12 months from the time BCRC funding is approved to when BCRC funding is granted to the researcher and the project is started, as matching funding must be in place before a project proceeds. BCRC cashflows are impacted due to the delay between when funds are committed and when funds are spent. Reflecting this in the BCRC budget is difficult due to uncertainty as to when all approved projects will start. As a result, BCRC carefully manages funding so Check-off dollars are not overcommitted or underutilized. At the date of publication, there are 10 projects approved that are not yet contracted for a total outstanding funding commitment of \$1.65 million. These projects have been included for clarity in Sections (iii) and (iv) and have been labelled as approved but with a funding agreement pending. A portion of these will be started before the end of the current fiscal year, but a larger portion will be carried over and initiated in the next fiscal year. Importantly, this does not include already contracted multi-year commitments through the science cluster, research chairs, and projects. All of these commitments will heavily draw on the BCRC reserve moving forward based upon the BCRC 5-year cashflow projections.

The tables in the following Sections (ii) to (viii) summarize the BCRC funded research projects by program area. The project title, timelines, budget and link to each available project factsheet are listed. The factsheets provide background, objectives and anticipated activities. Project factsheets, which are available on the BCRC website (BeefResearch.ca), are updated with a summary of results upon project completion. The Research Highlights sections highlight selected research results and benefits to the Canadian beef industry. More detailed results on all projects are available from the BCRC upon request.

ii. Beef Science Cluster IV

Beef Cluster IV, titled ‘Canada’s Beef and Forage Cluster: Driving environmental, economic, and social sustainability’, focuses on driving the growth of Canada’s beef industry and the overall economy by sustainably advancing Canadian beef and forage production while reducing the industry’s environmental footprint. In 2023, 23 projects were approved for a total Cluster size of \$21.42 million (\$9.28 million from industry and \$12.15 million from AAFC). Under the Cluster IV framework, every activity aligns with AAFC key priority areas, including: 1) Climate Change & Environment, 2) Economic Growth & Development and 3) Sector Resilience & Societal Challenges. The BCRC was able to ensure that research outcomes identified for the cluster aligned with these priorities, while building upon research in previous clusters and addressing industry priorities. While many activities will have impacts across multiple priorities, each approved project has been categorized under one of the AAFC key priority areas: Greenhouse Gas Reduction & Carbon Sequestration (accounting for 32% of the budget), Economic Growth and Development (26%) and Sector Resilience & Societal Challenges (23%). Mandatory activities under the Cluster IV framework (management, science co-ordination, knowledge and technology transfer and impact assessment) account for the remaining 19% of the budget.

BCRC Cluster IV Projects					
Project #	Project title	Project end date	Total NCO funding (\$)	2022/23 NCO funding (\$)	Factsheet
Greenhouse Gas Reduction & Carbon Sequestration					
ENV.06.21C	Grazing management across western Canada: uncovering the role of the microbiome	Mar 2028	586,299	140,828	Factsheet
ENV.11.21C	Understanding the influence of grazing management regimes on cow methane emissions in Canada	Mar 2028	289,892	17,300	Factsheet
ENV.12.21C	Potential for dietary mitigation of enteric methane during winter feeding in Canadian beef cows	Mar 2028	306,352	22,963	Factsheet
FDE.04.21C	Potential for inclusion of surplus food in beef cattle diets	Mar 2028	144,355	9,186	Factsheet
FDE.18.21C	Systematic characterization of the bovine rumen microbiome and determination of its causal roles in cattle feed efficiency and methane emission using machine learning	Mar 2028	241,596	73,804	Factsheet
FRG.14.21C	Integration of Livestock on Annual Crop Land	Mar 2028	483,099	59,017	Factsheet

Economic Growth & Development					
ANH.04.21C	The Canadian Cow-Calf Health and Productivity Enhancement Network (C3H/PEN)	Mar 2028	643,019	56,836	Factsheet
FRG.02.21C	Breeding climate-resilient forage germplasm for the Canadian beef industry: a national collaboration	Mar 2028	574,299	111,507	Factsheet
FRG.04.21C	Development of Cicer milkvetch (CMV) germplasm for enhanced fitness to alfalfa and improved animal health.	Mar 2028	195,258	39,613	Factsheet
FRG.06.21C	Advancing Canadian sainfoin breeding for profitability, animal health, and a future of sustainable beef and forage production systems	Mar 2028	284,358	24,694	Factsheet
FRG.08.21C	Winter hardiness of alfalfa	Mar 2028	471,659	97,239	Factsheet
FRG.09.21C	Maximizing Use of Forage Legumes to Improve Cattle Productivity and Health and Promote Soil Health and Carbon Sequestration.	Mar 2028	477,873	64,900	Factsheet
Sector Resilience & Societal Challenges					
ANH.15.21C	Re-considering treatment strategies: can we accelerate recovery from disease by considering gut health?	Mar 2028	442,970	95,335	Factsheet
ANH.16.21C	Understanding the molecular epidemiology and transmission of antimicrobial resistance in bovine respiratory disease pathogens to improve the precision and reduce the use of antimicrobials in beef production.	Mar 2028	343,472	61,252	To be developed
ANH.18.21C	Evaluating the efficacy of injectable and oral vaccines for Johne's disease in cattle	Mar 2027	182,261	42,091	Factsheet
ANH.25.21C	Establishment of bovine anaplasmosis in Canada: current status and development of rapid tests to control an emerging disease.	Mar 2028	262,367	78,525	Factsheet
ANH.26.21C	Application of glycomics to enhance resilience against bovine respiratory disease	Mar 2028	186,799	14,000	Factsheet
ENV.09.21C	A comprehensive risk-benefit analysis of ractopamine and common-use parasiticides: Co-occurring impacts on microbial communities, non-target environments, chemical fate, and GHG emissions from manure	Mar 2028	203,005	38,170	Factsheet
FDE.20.21C	A Benchmark study of the Canadian feedlot industry and an evaluation of best management practices (BMPs) to improve the sustainability of feedlots.	Mar 2028	285,590	30,294	Factsheet
FOS.01.21C	Development and validation of novel "green" technologies for improving the safety and shelf life of beef	Mar 2026	360,098	87,293	Factsheet
Knowledge & Technology Transfer					
KTT.01.21C	Enhancing Knowledge and Technology Transfer in the Canadian Beef Industry	Mar 2028	886,000	177,100	N/A

Retrospective Cluster Analysis					
SCI.02.21C	Impact Assessment - Retrospective Cluster Analysis	Mar 2026	35,000	5,000	N/A
Science Coordination					
SCI.01.21C	Science Coordination	Mar 2028	443,869	84,250	N/A

Total funding (industry and AAFC) on Cluster IV projects in 2023/24 is projected at \$3,547,852*

**Includes funding provided directly to the BCRC from the following provincial organizations:
 Alberta Cattle Feeders' Association = \$30,000; Les Producteurs de bovins du Québec = \$30,000*

Total 2023/24 projected National Check-Off funding for Beef Cluster IV projects = \$1,431,197

Beef Science Cluster IV Budget Overview

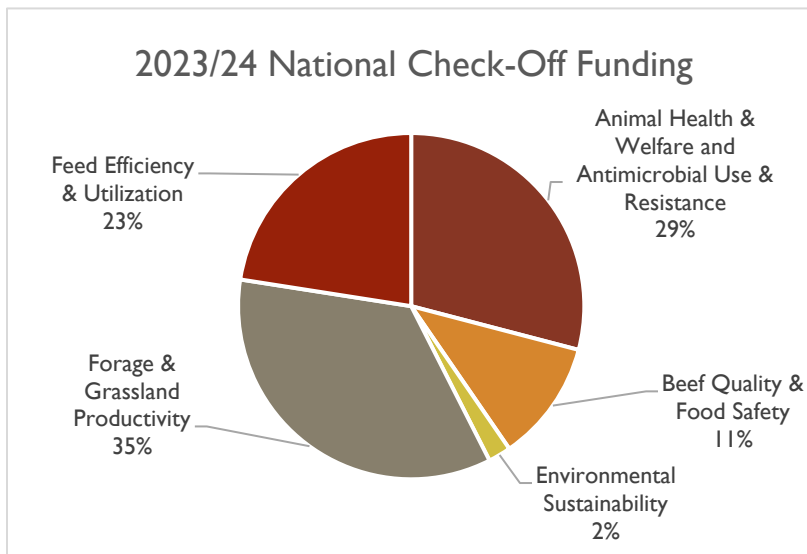
At the time of writing, most Cluster IV projects are fully spent for 2023/24. The actual expenditures for 2023/24 will be finalized by mid-June 2024.

Research Highlights:

Beef Cluster IV projects began in 2023/24 and have been collecting data for the first year. Interim and final results will be reported as they become available. The linked fact sheets above discuss each project in more detail.

iii. Priority Research Projects

Priority research includes projects that fall outside of the Cluster program requirement or timeline but are important to the beef industry. All projects are funded jointly by Canadian Beef Cattle Check-Off dollars leveraged with at least 1:1 funding from government and/or industry partners. Due to higher funding requirements for Science Cluster IV, the BCRC has moved from an annual call for proposals to completing a call every 18 months. In addition to offsetting cluster funding requirements, this allows for larger funding calls



that attract stronger research proposals and increases efficiency within the proposal evaluation process. A call for Letters of Intent went out in January 2024 and received 59 letters of intent. Of these, 21 research teams were invited to submit a full proposal. Final funding decisions will be made later in 2024.

In 2023/24, the BCRC managed 75 Priority Research Projects with funding made available to researchers through previous open calls for proposals.

National Check-Off funding in 2023/24 was allocated to Forage & Grassland Productivity (35%), Animal Health & Welfare and Antimicrobial Use & Resistance (29%), Feed Efficiency & Utilization (23%), Beef Quality & Food Safety (11%) and Environmental Sustainability (2%). The project title, National Check-Off funding and fact sheet link for each project is listed below.

BCRC Priority Research Projects					
Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
AMR.02.18	Use of bacteriophage-derived lysins in combatting multi-drug resistant (MDR) pathogens that cause bovine respiratory disease (BRD)	May 2025	97,565	40,000	Factsheet
ANH.04.18	Comparison of immune response and respiratory disease-sparing effect of homologous and heterologous prime-boost vaccine programs in beef calves	May 2024	47,350	7,102	Factsheet
ANH.19.18	Characterization and optimization of visual pen checking criteria to improve BRD treatment outcomes in feedlot cattle	May 2024	86,496	0	Factsheet
ANH.01.19	A screen for drugs that reveal <i>Mycoplasma bovis</i> to the bovine immune system: a novel approach to vaccine development	Sep 2024	71,250	0	Factsheet
ANH.02.19	Application of a multi-omics strategy to investigate liver abscess development in beef cattle	Mar 2025	419,250	53,925	Factsheet
ANH.10.19	Antimicrobial use and resistance in cow-calf herds: Will anything change after the switch to prescription only sales of medically important antimicrobials?	Oct 2024	143,070	0	Factsheet
ANH.18.19	Development of multiplex recombinase polymerase amplification (RPA) assays for the detection of antimicrobial-resistant (AMR) bacterial pathogens causing bovine respiratory disease (BRD).	Jul 2024	64,023	0	Factsheet
ANH.23.19	Stocking density and feed bunk space as a risk factor for liver abscesses	Mar 2024	56,215	8,433	Factsheet
ANH.03.20	Scratching the surface: Investigating the Prevalence, Nature, and Potential Causes of Itchy Cattle	Mar 2024	280,000	45,000	Factsheet
ANH.08.20	Infectious causes of calf diarrhea (scours) and efficacy of current vaccination strategies to prevent scours in beef calves in Western Canada (phase I)	Apr 2024	108,738	11,874	Factsheet
ANH.12.20	Investigating foot rot and its microbiological relation to digital dermatitis	Dec 2024	97,394	0	Factsheet
ANH.17.20	Assessment of animal condition and welfare outcomes to improve timely euthanasia in feedlot cattle	Jan 2026	105,625	10,562	Factsheet
ANH.19.20	Enhancing respiratory health of beef cattle through modulation of innate immunity, analysis of the resistome, and identification of culturable bacteria	Jun 2025	300,000	30,000	Factsheet

Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
ANH.20.20	Rapid characterization of the viral microbiome in arriving feedlot calves to inform vaccine gaps and risk assessment for bovine respiratory disease	Mar 2024	227,010	22,701	Factsheet
ANH.25.20	Comprehensive evaluation of the effect of extended-term delivery of local anesthetic on mitigating the pain caused by castration	May 2024	79,055	9,906	Factsheet
ANH.29.20	Insights into environmental transmission of Escherichia coli in beef production	Dec 2024	84,000	8,400	Factsheet
ANH.30.20	Antimicrobial use and resistance in eastern Canadian cow-calf herds - establishing a baseline for antimicrobial stewardship	Sep 2024	155,745	0	Factsheet
ANH.01.21	Understanding the modes of action of yeast as a direct fed microbial for feedlot cattle	Apr 2023	155,034	3,966	Factsheet
ANH.02.21	Understanding contagious transmission informs best management practices for respiratory disease in feedlot calves by leveraging whole genome sequencing of a unique isolate collection	Dec 2024	98,606	0	Factsheet
ANH.04.21	Effect of avermectin and tetracycline on the rumen microbiome and resistome of Beef cattle	Jan 2024	65,000	0	Factsheet
ANH.23.21 ¹	Development of a bacterial community to enhance the respiratory health of cattle	Mar 2028	255,725	0	To be developed
ANH.01.22	Known unknowns: macrolide resistance at beef cattle feedlots	Mar 2026	224,772	96,721	To be developed
ANH.08.22	Maternal nutrition, winter feeding, and calf immune fitness in beef cattle	Mar 2027	190,476	142,857	To be developed
ANH.10.22	A Microbiome-supported Bovine Reproductive Sequencing Panel (BovReproSeq) for detecting, preventing and mitigating reproductive diseases in beef cattle	Oct 2026	260,700	0	Factsheet
ANH.11.22	Development of an enhanced early life program (EELP) to improve health and productivity of beef cattle	Dec 2027	137,060	102,795	To be developed
ANH.01.23	Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS): Beef Feedlot Antimicrobial Resistance Surveillance: the Beef Feedlot AMR Surveillance Project	Mar 2028	0	0	N/A
BQU.03.19	Validation of rapid evaporative ionization mass spectrometry (REIMS) for tenderness prediction	Jan 2024	154,735	23,211	Factsheet
BQU.02.22 ¹	Up-cycling of low valued cattle hides into alternative protein food products	Mar 2027	77,050	57,788	To be developed
ENV.03.19	Prairie Ecosystem Services Project: Quantifying the contribution of wetlands in livestock production landscapes	Mar 2024	190,555	28,583	Factsheet
ENV.07.19	Watershed-scale assessment of water and nutrient dynamics of pastures utilized by beef cattle	Dec 2023	134,389	20,158	Factsheet
ENV.07.20	Quantifying the effects of adaptive multi-paddock grazing on soil carbon sequestration and soil organic matter quality	Apr 2024	108,162	16,224	Factsheet

Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
ENV.07.21	Estimating the cost of providing ecosystem goods and services on prairie grasslands	Mar 2027	93,777	0	To be developed
FDE.03.18	Use of high-moisture corn products for finishing cattle and corn stover to extend the grazing season for pregnant beef cattle	Sep 2023	142,146	21,322	Factsheet
FDE.01.19	Canola supplementation of cows in late gestation leads to increased calf growth and modification of epigenetic, gene expression, and blood metabolite profiles	Jul 2026	137,074	14,462	Factsheet
FDE.03.19	Improving feed efficiency in the cow herd: Individual cow variability in fibre digestibility, feed efficiency, and methane emissions.	Dec 2024	7,500	0	Factsheet
FDE.06.19	Evaluating new next-generation strategies to boost breeding efficiency for Feed and Forage Production in Barley and Triticale	Feb 2024	265,500	61,895	Factsheet
FDE.04.20	Level of fat from canola seed supplementation in pregnant beef cow diets - Effects on cow and calf performance	Aug 2026	139,214	0	Factsheet
FDE.05.20	Development and demonstration of a genomics-enhanced whole herd genetic management platform to improve beef production efficiency and quality	Aug 2024	318,900	47,835	Factsheet
FDE.07.20	Examining the microbial basis of forage digestion efficiency in beef cattle	Mar 2025	214,434	29,700	Factsheet
FDE.01.21	Further exploration of calcium oxide to improve the quality of indigestible feeds	Mar 2024	59,956	0	Factsheet
FDE.02.21 ²	Developing strategies to reduce the toxicity of ergot alkaloids in the diet of feedlot cattle.	Mar 2028	354,161	0	To be developed
FDE.14.21 ¹	Improving evaluation of cereal grain processing and starch digestibility	Mar 2028	466,029 ³	0	To be developed
FDE.19.21	Novel microbiome manipulation strategies for reducing methane emission and foodborne pathogen colonization	Mar 2028	150,697	0	To be developed
FDE.03.22 ¹	Evaluation of malate potential in beef cattle production	Mar 2026	109,164	81,873	To be developed
FDE.05.22	The impact of early life nutritional management of purebred and crossbred cattle on lifetime feed efficiency and methane production	Aug 2026	193,500	0	To be developed
FDE.01.23	Barley Cluster	Mar 2028	89,161	9,533	To be developed
FDE.02.23 ¹	Improving the value and environmental impact of barley through breeding	Mar 2029	60,000	0	To be developed
FOS.01.18	Persistence of Shiga toxin-producing Escherichia coli (STEC) in Cattle and Association with Clinical Infections in the Same Geographic Region	Mar 2024	97,875	0	Factsheet
FOS.01.20	In-Plant Validation of Harvest Processing Equipment Sanitization Best Practices	Nov 2024	71,489	15,729	Factsheet
FOS.01.21	To explore conditions for improving the efficiency of water usage during sanitation	Mar 2026	172,050	13,105	Factsheet
FOS.02.21	SRM Risk Analysis - Problem Formulation & Risk Analysis	Feb 2024	60,000	60,000	To be developed

Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
FOS.03.21	Assessment of the population structure of E. coli O157 from cattle and associated food safety risks	Apr 2028	170,097	127,573	To be developed
FRG.03.18	Improving vegetative biomass yield and digestibility in alfalfa for enhanced livestock production.	Aug 2024	159,300	22,170	Factsheet
FRG.08.18	Assessing the impact of grazing annual forage cover crops in an integrated crop-livestock system	May 2023	195,350	0	Factsheet
FRG.09.18	Enhancement of total lipid content/composition in non-GMO alfalfa and sainfoin for improved energy density and reduced methane emissions	May 2025	182,188	17,728	Factsheet
FRG.08.19	Forage Potential of Hybrid Fall Rye (HR) in Alberta and Saskatchewan	Mar 2024	87,692	0	Factsheet
FRG.09.19	Corn intercropping strategies for extended winter grazing of beef cattle	Mar 2025	91,066	32,033	Factsheet
FRG.01.20	Collaborative testing and development of forage barley varieties for western Canada	Mar 2024	44,425	14,464	Factsheet
FRG.11.20	Complex forage blends: reducing supplementation costs through strategic forage selection	Nov 2026	89,190	66,892	To be developed
FRG.12.20	Quantifying the economic benefits and carbon capture efficiency of including forages in cropping systems: A test using long-term data from the Breton plots	Mar 2025	62,662	0	Factsheet
FRG.14.20	Identification of genetic factors contributing to abiotic stress tolerance in intermediate wheatgrass	Mar 2024	21,500	0	Factsheet
FRG.02.21	Low-cost forage management (hay and pasture systems, legume seeding) impacts on productivity and soil health of old grassland	Mar 2026	235,492	23,549	Factsheet
FRG.04.21	Evaluation of polycrop mixtures for swath grazing, soil health and economics	Aug 2027	190,178	0	Factsheet
FRG.13.21 ¹	Generating Climate Smart Alfalfa through an Integrated Approach Targeting Beneficial Root and Carbon Assimilation Traits	Mar 2028	216,158 ³	0	To be developed
FRG.16.21 ¹	Effect of Stocking Rate During Early Gestation on Subsequent Performance of Beef Females	Mar 2028	287,177 ³	0	To be developed
FRG.04.22	Evaluating the use of prescribed fire to rejuvenate degraded forage pastures and its impact on soil health	Mar 2027	208,955	121,717	To be developed
FRG.06.22	Sod-seeded legumes to improve forage production, forage quality and soil benefits	Mar 2026	162,622	0	To be developed
FRG.08.22 ¹	Evaluation of Stocking Rate, Grazing Duration and Recovery Times on Native Grassland: Impact on Forage Production, Livestock Production, and Economics	Mar 2026	71,745	53,809	To be developed
FRG.09.22	Evaluation of new perennial forages for pasture production selected for improved yield, environment resilience, nutritional value, and carbon hoofprint	Mar 2027	115,202	86,402	To be developed

Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
FRG.13.22	Evaluation of perennial forages under grazing for enhanced environmental sustainability and animal health	Mar 2028	220,338	165,253	To be developed
MISC.03.20	Remote Inspection & Grading Pilot Project	Jul 2023	205,887	50,443	Factsheet
LL.01.22	Integrating beef, forage and cropping systems to improve soil carbon sequestration and reduce greenhouse gas emissions' Alberta Living Lab	Mar 2027	200,000	40,000	N/A
LL.02.22	SODCAP Living Lab	Mar 2027	200,000	50,000	N/A
LL.03.22	BC Living Labs: Extended Grazing Season and Winter-Feeding Strategies	Mar 2027	60,000	0	N/A

¹Project has been approved but the funding agreement is pending.

²Project Lead funding agreement is in place, collaborator funding agreement is pending.

³Project is approved but reported Total NCO Funding Amount yet to be finalized.

Total 2023/24 projected National Check-Off funding for ongoing Priority Research projects = \$1,967,693

Provincial cattle association priority research project investment in 2023/24 = \$0

Project Highlights:

ENV.07.19: Watershed-scale assessment of water and nutrient dynamics of pastures utilized by beef cattle - [Factsheet](#)

Dr. Marcos Cordeiro and Dr. David Lobb from the University of Manitoba modelled the effects of nutrient runoff from grazing cattle using a Canadian lens.

The impact of nutrient runoff on watersheds is a concern to producers, lawmakers, and the public alike. Prior to this project, there was limited information available to assess the extent of the issue within a Canadian context.

Researchers found the current models appear to overestimate manure run-off in pasture watersheds. Watershed impact varies by region, though several principles hold across regions:

- Phosphorus levels in the soil have more effects on watersheds than manure.
- Vegetation is usually the highest contributor to nitrogen export.
- Grazing is not the major contributor of nutrient export from grasslands.

FRG.08.18: Assessing the impact of grazing annual forage cover crops in an integrated crop-livestock system - [Factsheet](#)

Dr. Jillian Bainard at AAFC Swift Current and team saw cover crops as an opportunity to foster synergy between crop and beef producers to improve feed value and soil health. However, many outcomes needed to be quantified within a Canadian context.

These researchers utilized 4 different sites in Saskatchewan and Manitoba to assess the value of integrated livestock and crop systems. They found that the benefits of using annual forage mixtures depend on region and weather. Poor establishment was found to be a challenge in drought-prone areas. Diverse annual mixtures improved soil health and quality regardless of whether they were grazed or not.

FDE.03.18: Use of high-moisture corn products for finishing cattle and corn stover to extend the grazing season for pregnant beef cattle - Factsheet

Due to the growing popularity and development of corn varieties with lower heat units, University of Saskatchewan's Dr. Greg Penner and team validated the use of high-moisture corn and snaplage as a feed source.

This team encountered several challenges in feeding high-moisture corn residue to extend the grazing season. Feeding dry pregnant cows high-moisture corn residue in windrows as part of a winter grazing system required more supplementation with dry distillers' grains than when swath grazing whole-plant barley, though both systems had similar performance responses. Baling high-moisture corn residue reduced field loss but resulted in bales heating and mould formation. Cows fed high-moisture corn residue bales required more supplementation than those fed barley greenfeed bales and still corn-residue fed cows had lower feed intake, final body weight, and body condition score than those consuming barley greenfeed.

However, producers in western Canada could consider high-moisture corn products (either snaplage or high-moisture corn) as energy sources for finishing cattle. Additionally, high-moisture corn may have the potential to improve hot carcass weight and dressing percentage while reducing the incidence of liver abscesses compared to cattle fed dry-rolled barley grain.

ANH.02.21: Understanding Contagious Transmission Informs Best Management Practices for Respiratory Disease in Feedlot Calves by Leveraging Whole Genome Sequencing of a Unique Isolate Collection - Factsheet

Drs. Emily Snyder and Cheryl Waldner at the WCVM looked to Western Canadian feedlots to better understand the degree to which bovine respiratory disease (BRD) and antimicrobial resistance (AMR) arise in individual calves compared to the degree they are spread contagiously from calf-to-calf.

Bacteria that cause BRD are naturally found alongside other bacteria in the respiratory tract of cattle. In a healthy system, these "good" bacteria keep BRD-causing bacteria in check but when the immune system and these good bacteria are weakened, BRD has the opportunity to take over. Unfortunately, misuse of antibiotics has accelerated the incidence of AMR which can lead to AMR BRD pathogens. Understanding if AMR is arising independently in each animal or being spread can potentially inform how we approach treating BRD.

Ultimately, researchers discovered respiratory disease and antibiotic resistance can develop within individual cattle one at a time, but the contagious spread of resistant BRD pathogens among animals is primarily responsible for the widespread BRD early in the feeding period.

iv. Proof of Concept & Validation Trials

BCRC's Proof of Concept & Validation Trial program has been very successful since its launch in 2018/19. This program supports short-term (six months to one year) proof of concept-based research in an emerging area of research or technology development to determine whether the concept should be pursued as a larger, more defined research program. It is also intended to support clinical trials to validate practices or technologies discovered through research projects and/or to facilitate the adaptation of technologies that have been utilized in other sectors, commodities, or countries. Projects funded to date have achieved what was intended under this program. Some projects supported under the POC program have provided preliminary data to demonstrate value in further investment in research in an area. Likewise, some projects have found that further

research should not be pursued at a larger scale, saving money and encouraging the redirection of research to more promising concepts.

In 2023/24, the BCRC funded the sixteen proof of concept (POC) projects listed below, including six new projects approved for funding in 2023. Due to the short-term nature and smaller budgets of these projects, all six new projects funded in 2023 are currently underway.

BCRC Proof of Concept Projects					
Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
POC.14.20	Effects of maternal supplementation of vitamin A during late gestation on intramuscular fat deposition in the offspring	Aug 2023	48,530	7,279	Factsheet
POC.08.21	Assessing the viability of real-time pathologist assisted field necropsies to improve diagnostic outcomes of beef cattle cases submitted to UCVM's Diagnostics Services Unit (DSU)	May 2023	22,516	0	Factsheet
POC.11.21	Bacterial metabolites as natural antimicrobials for controlling biofilm formation by pathogens	Sep 2023	49,910	0	Factsheet
POC.16.21	Antimicrobial Peptides that specifically inhibit the BRD pathogen <i>Mannheimia haemolytica</i>	Apr 2023	48,875	7,331	Factsheet
POC.21.21	Modulating nitrogen responses in forage grasses for improved nitrogen use efficiency, yield, and grazing tolerance.	Mar 2024	39,930	0	Factsheet
POC.07.22	Use of multiple mitigation strategies to reduce greenhouse gas emissions in beef cattle production systems	Feb 2026	50,000	0	Factsheet
POC.08.22 ¹	Verification that guanidinoacetic acid supplementation enhances growth and feed efficiency of beef steers without compromising carcass and meat quality	Mar 2025	50,000	42,500	Factsheet
POC.11.22	Impact of good vaccine practices (GVP) at field on vaccine effectiveness	Jun 2024	50,000	0	Factsheet
POC.14.22	Using a bovine Lactobacillus mixture as a strategy to minimize beef calf stress	Mar 2025	50,000	0	Factsheet
POC.19.22	Towards the identification of agents associated with infectious bovine keratoconjunctivitis (IBK, pink eye)	Dec 2025	45,943	0	Factsheet
POC.01.23	Faster, cheaper, more accurate detection of Shiga toxin producing E. coli	Dec 2024	49,910	42,424	To be developed
POC.06.23	Learning from the past: A universal and updated analysis of environmental and cattle metagenomic information from beef operations	Sep 2024	50,000	42,500	To be developed
POC.13.23	Establishing a genomic sequencing strategy for Bovine Respiratory Syncytial Virus (BRSV) to enable genomic surveillance of field strains and vaccine strains	Dec 2024	50,000	42,500	To be developed
POC.26.23	Testing the protective efficacy and DIVA (differentiate infected from vaccinated animals) potential of MSX-I in a pre-clinical mouse model of bovine tuberculosis	Nov 2024	50,000	42,500	To be developed

POC.34.23	Identification of bacterial enzymes associated with beef production efficiency and carcass quality	Nov 2024	50,000	42,500	To be developed
POC.35.23	Genomic discovery and elucidation of highly unusual and novel microbes in septic arthritis tissues of feedlot cattle	Dec 2024	44,333	37,683	To be developed

¹Project has been approved but the funding agreement is pending

Total 2023/24 projected National Check-Off funding for Proof of Concept projects = \$307,217.

Project Highlights:

POC.08.21: Assessing the viability of real-time pathologist assisted field necropsies to improve diagnostic outcomes of beef cattle cases submitted to UCVM's Diagnostics Services Unit (DSU) - Factsheet

A challenge for many rural producers is capturing the value of the expert help that typically congregates in urban areas. This, in addition to rural vets having an intense workload, means that sometimes the best care is out of reach and, in the case of necropsies, means producers struggle to find the value in the money spent on veterinary investigation. Telemedicine offers a unique opportunity to create relationships between expert pathologists in the lab and provide value back to producers to gather valuable information from the team.

Dr. Jennifer Davies at the University of Calgary investigated the value of telemedicine via video call to improve the process of conducting necropsies and yielding a reliable diagnosis.

This team found that necropsies conducted by veterinarians while on a video call with a trained pathologist had a 46% higher chance of reaching a diagnosis than unassisted necropsies. Having this service available to rural clinics would strengthen disease surveillance, support, build trust within the Vet-Client-Patient-Relationship (VCPR) and allow producers to make more informed and cost-effective choices regarding the health and welfare of their herds.

POC.14.20: Effects of maternal supplementation of vitamin A during late gestation on intramuscular fat deposition in the offspring - Factsheet

Dr. Marcio Duarte at the University of Guelph proposed that feeding three times the recommended NRC levels of vitamin A to cows in late gestation may be an effective strategy to improve marbling in their offspring.

They found that supplementing vitamin A above recommended levels to pregnant cows in late gestation can increase the marbling and marbling potential in calves from early life to slaughter without depositing fat elsewhere on the carcass. This was achieved without any other differences in dam or calf performance, only marbling was impacted. However, despite the difference in marbling, there was no significant difference in grade.

v. Research Capacity

The BCRC is committed to developing and maintaining critical research capacity to facilitate proactive inquiry and innovation and support the advancement of the beef industry. The BCRC began developing Research Chairs in partnership with key research institutions in 2018/19 to address industry-identified gaps in research capacity. The evaluation of Research Capacity concepts by the BCRC considers the incremental nature of the proposed research capacity, institutional investments, program support and capacity priorities identified by industry.

The BCRC has held two successful Research Chair calls for proposals with the first two Research Chairs approved by the Council in 2019 and a third approved in December 2020. The Chairs include:

- **Beef Production Systems Chair** “to increase the competitiveness of those sectors of the Canadian beef industry that rely heavily on grazing-based forage resources, while maintaining a strong focus on beef production and market outcomes”, University of Alberta. Dr. Gleise da Silva was hired in April 2021 to fill this position.
- **Chair in One Health and Production-Limiting Diseases** with the goal “to increase capacity for applied field research and surveillance in specific priority areas outlined by the beef industry including: animal health and welfare, antimicrobial use, resistance and alternatives and on-farm food safety”, Western College of Veterinary Medicine, University of Saskatchewan. Dr. Cheryl Waldner was hired in January 2021 to fill this position.
- **Beef Industry Forage Management and Utilization Chair** with the goal “to develop and evaluate agronomic strategies to optimize forage establishment, yield, quality and stand longevity and identify feeding and grazing strategies that optimize animal performance while contributing to improved soil health and environmental sustainability”, University of Saskatchewan. Dr. Bree Kelln was hired in April 2022 to fill this position.

In 2023, the BCRC was approached by two universities to provide start-up funds for new researchers. Start-up funds are used by researchers in new positions to build their research program. Both positions address current gaps in Canada’s beef & forage research capacity and consequently committing start-up funds to support the recruitment of qualified individuals was deemed to be a high impact investment for BCRC.

- **Assistant Professor of Forage Production and Management Science** builds capacity in the forage department in a position that had not been filled since 2013, University of Alberta. Dr. Erick da Silva Santos was hired in September 2023.
- **Professor in Ruminant Health Management** creates incentives to recruit a new researcher to fill an existing position, University of Guelph. Hiring is currently underway.

The following table details the five research capacity projects the BCRC funded in 2023/24.

BCRC Research Capacity Projects				
Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)
CHAIR.01.18	Beef Cattle Research Council Industrial Research Chair in One Health and Production-Limiting Diseases (the "NSERC Chair")	Dec 2025	750,000	75,000
CHAIR.02.18	BCRC - Hays Chair in Beef Production Systems	Mar 2030	1,500,000	150,000
CHAIR.01.20	Beef Industry Forage Management and Utilization Chair	Mar 2030	2,500,000	250,000
SU.01.23	Assistant Professor of Forage Production and Management Science Start-Up Funds	Oct 2028	250,000	150,000
SU.02.23	Professor in Ruminant Health Management Start-Up Funds	Apr 2025	50,000	0

Total 2023/24 National Check-Off funding for Research Capacity projects = \$625,000.

The BCRC continues to prioritize maintaining research capacity in the beef industry. In early 2024, a call launched for Expressions of Interest that will consider various positions and funding structures. Final decisions for the next research capacity investment will be made later in 2024.

vi. Knowledge & Technology Transfer

The BCRC funds Knowledge and Technology Transfer (KTT) activities and projects under Cluster IV program and outside of the Cluster program through internal initiatives, the Canadian Beef Technology Transfer network and external extension projects.

Cluster IV Program

Under the Cluster IV program, activities completed in 2023/24 include regular communication with industry and production of extension resources. This includes both development and distribution of new resources along with maintenance and promotion of existing extension resources when seasonal including videos, decision tools, infographics, articles and webinars.

Resources developed include 49 blog posts, 44 research results summary fact sheets, 12 monthly e-newsletters, 12 articles for Canadian Cattlemen - The Beef Magazine, seven production-focused topic webpages, an interactive decision-making tool, three infographics, three videos, three webinars, three online courses and 11 podcast episodes.

New production-focused topic pages were developed covering topics related to biosecurity and foot and mouth disease. Five additional topic pages were updated with new information and multimedia assets on topics of forage species, improving forage yields, weed and brush control, alternative feeds and disposal of cattle mortalities, bull management and calving seasons.

A new decision-making tool was created that estimates the costs of developing a replacement heifer from weaning, through breeding to preg-checking. The calculator provides estimates of total development costs and a break-even selling price for bred heifers when you input relevant information such as weaning date, cattle prices, expected breeding performance, feed and nutrition costs, veterinary expenses and other associated costs. Understanding the cost of developing replacement heifers is crucial for informed decision-making.

Creation of infographics provides a means to extend information through various formats and platforms. Infographics developed during the 2023/24 year added to a popular a series on calving and calf management, and remote drug delivery best practices.

Videos produced this year provide newborn calf assessment and intervention guides, and remote drug delivery best practices. Views of video resources continue to be strong with a combined viewing of these new resources on YouTube and Facebook of more than 11,000 times.

Three webinars were held featuring producers, agrolgists, researchers and veterinarians. Nearly 550 individuals were in attendance during the live presentations, the majority of whom identified as being cattle producers. Webinar registrations and recording views continue to remain high, with a [*library of past webinars*](#) on BeefResearch.ca.

The new [*Canadian Beef Cattle Podcast*](#) launched January 12, 2024. Weekly episodes deliver the most popular content from beefresearch.ca in audio format while seasonally relevant. Episodes released in 2023-24 have been downloaded more than 3,000 times.

The BCRC's technology transfer efforts consistently receive positive feedback from producers and other stakeholders. BeefResearch.ca continues to experience high traffic, receiving more than 525,000 pageviews in 2023/24. Analytics indicate that the audience is interested in a variety of topics, particularly those that are most practical and related to seasonal activities for the sector. Articles and other resources developed are frequently and increasingly redistributed by industry groups, trade magazines and other media, as well as by producers on social media.

Social media networks continue to grow. For example, YouTube subscribers increased by 3,038 to 5,450 in 2023/24. BCRC's most popular organic social media post reached 56,000 Facebook users and had 198 clicks.

The number of email subscriptions also continues to increase. Currently, more than 8,100 individuals are subscribed to BCRC's regularly published articles and more than 3,600 are subscribed to BCRC's monthly e-newsletter, *The Wire*. Average open rates are 41% and 43% respectively, which are substantially higher than the agriculture industry average of 23%.

In addition to the production and distribution of extension resources, three 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 their knowledge, skills and network through discussions and by initiating various introductions, tours and meetings. Mentees identify goals and plans to achieve them and are provided with a small travel budget to attend relevant industry events.

Since the inception of the mentorship program, 38 researchers have participated across a wide range of specialty areas. Two thirds of the participants have come to work in Canada, originally from over 14 different countries. The mentorship program has encouraged the development of strong relationships between industry and researchers. Researchers have increased confidence and knowledge of industry issues, while industry has benefited from the diverse backgrounds and technical skills new researchers can bring to address priorities.

The budget for this program is included in Section III (ii) above.

Activities internal to BCRC

Over the last several years the BCRC has invested in internal activities to develop content, decision making tools, and resources that are aligned with key extension priorities identified by industry. During 2023/24, the BCRC focused on two internal activities.

The ongoing **Eastern content expansion** initiative improves the visibility and uptake of BCRC content by beef producers in Ontario, Quebec, and Atlantic provinces through a focus on:

- Resource modification and/or development to ensure relevance to eastern Canadian producers
- Decision making tool modification and/or development including data gap assessment and scenario development
- Webinar and other modular resource development to support regional extension program delivery
- Eastern extension network expansion to grow awareness of BCRC resources

As a result of this initiative, a targeted focus on inclusion of eastern focused content has become a consistent occurrence when developing BCRC extension resources. This work also continues to expand relationships with extension specialists in Central and Eastern Canada, leading to greater collaboration and promotion of BCRC extension resources applicable in those regions.

The second internal activity that continues to see tremendous uptake is the ***Enhancing extension through veterinary collaboration initiative***. This work identifies opportunities where veterinarians can further inform and persuade producers to adopt practices or technologies that benefit them and the industry - creating awareness of existing BCRC resources and developing new resources where appropriate. In 2023/24, the ongoing #Calf911 initiative included development of two additional printable calf management guides. In addition, two videos were produced. One video demonstrates how to evaluate newborn calves using the Calf VIGOR Score System, while the other explains how to spot and respond to respiratory acidosis in a newborn calf. A newsletter for Canadian veterinary teams who work with beef clients is published quarterly with a current direct subscriber list of more than 1,800 individuals. This is an increase of more than 600 subscribers over the past year. Email open rates are over 60% (industry standard open rate is 23.3%).

Through the work undertaken for both initiatives since their inception, awareness was identified as a priority. Familiarity and knowledge of BCRC extension resources was recognized as lacking across the animal veterinary community and for Canadian beef and cattle producers and industry stakeholders across the country, particularly with eastern producers. Following the success of a 2022/23 campaign, a 2023/24 awareness campaign delivered industry-targeted digital advertising. Data from 2022/23 was analyzed to inform a modified continuation of these efforts focused on the most effective channels and platforms.

Total 2023/24 projected National Check-Off funding for Internal content development = \$175,000

Activities external to BCRC

The ***Canadian Beef Technology Transfer Network*** continued to gain momentum in 2023/24, bringing together groups and individuals actively involved in knowledge and technology transfer that support Canadian beef producers and advance the Canadian beef industry. By facilitating greater communication and collaboration through the Network, resources and expertise are shared, undue duplication is avoided, and collaborative groups are empowered to develop effective resources and strategies that are applicable long-term across regions and in line with the Canadian Beef Research and Technology Transfer Strategy.

A small advisory committee helps guide direction of the group, support communications through use of the MS Teams platform, and inform content of a quarterly e-newsletter to the members to encourage sharing of extension-related resources and learnings. The Network membership, currently at over 150 individuals, convenes once per year for their annual online meeting to further facilitate communication and collaboration.

The BCRC launched two new collaborative extension initiatives with Network working groups in 2023/24. Working group members are employed by various organizations across the country with related expertise and influence on producers. The water quality and management collaborative extension initiative is focused on creation of extension outcomes related to water quality (including testing, algae identification, sulphate removal and mitigation), water quantity requirements and source development/management (placement of dugouts, trough setup). A review of related existing extension resources has been conducted and gaps have been identified. Focus groups held with cow-calf producers across Canada provided a deeper understanding of current perceptions and practices related to water quality and management in the beef cattle sector, which informed recommendations for effective extension strategies. A workplan has been developed to create interactive tools, infographics, articles, videos, and decision trees.

The collaborative extension initiative to improve genetic literacy for commercial beef producers is focused on providing resources that lead to improvements in important production metrics (i.e., fertility, calving

distribution, calving and weaning percentage, growth performance, disease resilience). With a working group of individuals with expertise and influence in different regions of Canada, a workplan had been drafted with outcomes such as videos, podcast episodes and decision support tools that are producer-centric and non-breed specific.

Total 2023/24 projected National Check-Off funding for the BCRC Technology Transfer Network = \$75,000

External Projects & Regional Activities

A new funding program pilot to support regional extension activities launched in 2023/24. Applicants could apply to receive up to a maximum of \$5,000 in funding per activity. Matching funding was encouraged, but not a requirement. Thirteen activities are ongoing or complete, including extension meetings, field days, workshops, video production, peer group coordination and veterinary student engagement.

Several projects from previous knowledge and technology transfer calls are ongoing. They are included in the following table with the regional extension activities.

BCRC Knowledge and Technology Transfer Projects					
Project #	Project title	Project end date	Total NCO funding (\$)	2023/24 NCO funding (\$)	Factsheet
KTT.01.18	Early Calf Health and Survival Management Risk Assessment Tool	Dec 2024	36,656	0	Factsheet
KTT.01.21	Motivations, barriers and alternatives to feed testing for cow-calf producers	Dec 2024	40,950	0	Factsheet
KTT.05.20	Canadian Forage U-Pick: Expanding the Western Canadian Forage U-Pick tool to include Eastern Canada	Aug 2023	43,450	6,518	Factsheet
KTT.08.21	Development and Production of a Beef Cattle Animal Health Podcast	Aug 2024	31,614	10,740	Factsheet
KTT.03.23	Extensive Winter Management Workshop, Available Funding, and Non-traditional feeds	Dec 2023	825	825	NA
KTT.05.23	Young Producer and Female Led Cattle Clinics	Mar 2024	1,987	1,987	NA
KTT.07.23	Training and Education Events for Beef Producers	Mar 2024	5,000	5,000	NA
KTT.09.23	Feeding and Managing Cattle Through Drought (Nutrition, Feed testing, Water quality, Vaccine use, Disease Prevention)	Jan 2024	2,500	2,500	NA
KTT.12.23	Rancher's University	Dec 2023	750	750	NA
KTT.15.23	Making Science Accessible: Turning 10+ years of calf health and welfare research into producer-friendly videos	Aug 2024	1,500	0	NA
KTT.16.23	Livestock Water Management Series	Aug 2024	2,500	0	NA
KTT.19.23	Who Darded? A Seminar on Remote Drug Delivery Best Practices	Jun 2024	5,000	0	NA
KTT.26.23	Pilot Project: Beef Producer Peer Groups	Aug 2024	3,000	0	NA

KTT.28.23	Improving Nutrition and Grassland Management Through the Education of Future Beef Cattle Veterinarians	Aug 2024	5,000	0	NA
KTT.31.23	Designer Cows for Your Ranch - Extension Event	Mar 2024	2,500	2,500	NA
KTT.32.23	CARA Cattlemen and Grazing Club Events	Aug 2024	2,500	2,500	NA
KTT.33.23	CowBytes Training and Nutrition Workshop	Dec 2023	4,881	4,881	NA

Total 2023/24 projected National Check-Off funding for Knowledge & Technology Transfer projects = \$38,201

Project Highlights:

KTT.26.23 - Pilot Project: Beef Producer Peer Groups

A collaboration between the Saskatchewan Ministry of Agriculture and the University of Saskatchewan to create producer peer groups is underway. It is understood that knowledge transfer between peers is invaluable, and this project is focused on the creation and facilitation of peer groups among beef cattle producers in Saskatchewan. One objective is to provide a new framework for extension to beef producers through facilitating open and honest discussion on challenges, opportunities and experiences. The project will be completed in the fall of 2024.

KTT.33.23 - CowBytes Ration Balancing Software and Nutrition Workshops

Feed represents the largest cost per cow per year on Canadian beef farms. CowBytes Ration Balancing Software is a tool available to assist producers in preparing feed rations that reduce costs while meeting animal production targets. The Manitoba Agriculture organized seven training workshops at locations across Manitoba focused on teaching producers how to effectively use the CowBytes program for better feed utilization and low-cost ration balancing.

vii. Surveillance Research Networks

A key priority is ensuring the continuation and enhancement of priority surveillance networks related to production limiting diseases and antimicrobial resistance and use. The purpose of these networks is to inform industry practice, policy and regulation, public trust discussions and future research and extension priorities. Funding for surveillance was allocated in the BCRC's 10-year plan but has thus far not been activated to any significant level due to investments in Science Cluster III and Science Cluster IV, as well as investments recently made by the Public Health Agency of Canada (PHAC) to provide funding to beef cattle surveillance through the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) as is done for other livestock sectors.

The first year that specific projects were invested in through the BCRC's surveillance research network and outside of the Science Cluster was 2020/21. Moving forward, the Council has decided this program will be formally discontinued. Surveillance will remain a priority and will be considered in identifying priorities for future calls for research proposals, with funding advanced through that mechanism as appropriate. Additional programs will be evaluated in coming years and selected based on key priorities where it is viewed that industry funding will assist in ensuring surveillance is advanced within government and industry frameworks.

BCRC Surveillance Projects					
Project #	Project title	Project end date	Total NCO funding (\$)	2022/23 NCO funding (\$)	Factsheet
SURV.01.20	The Western Canadian Animal Health Network (WeCAHN) beef network: connecting farmers, specialists and information systems to improve cattle health in western Canada	Mar 2024	86,238	14,061	Factsheet
SURV.02.20	Surveillance of antimicrobial use (AMU) and antimicrobial resistance (AMR) in Canadian feedlot cattle; continuation of bovine respiratory disease pathogen isolation and susceptibility testing	Dec 2025	360,434	37,043	Factsheet
SURV.03.20	Respiratory pathogens in calves at weaning: A pilot sentinel surveillance project evaluating AMR risk for calves prior to feedlot entry	Nov 2023	62,137	9,320	Factsheet

Total 2023/24 projected National Check-Off funding for Surveillance Research Network = \$60,424.

Project Highlights:

SURV.03.20: Respiratory pathogens in calves at weaning: A pilot sentinel surveillance project evaluating AMR risk for calves prior to feedlot entry - [Factsheet](#)

Surveillance is an important aspect of benchmarking, goal setting and prevention of wrecks in any industry. Findings from the Western Canadian Cow-Calf Surveillance Network indicated that respiratory disease is the leading cause for antibiotic use at the feedlot. This sparked Dr. Cheryl Walder at the University of Saskatchewan and team to wonder if some antimicrobial resistant (AMR) BRD strains may be coming into the feedlot from the cow-calf sector in weaned calves upon arrival.

Results of this inquiry found that at feedlot entry, fewer than 2% of calves were carrying resistance to one or more antibiotic in any of the major Bovine Respiratory Disease (BRD) pathogens (*Mannheimia haemolytica*, *Pasteurella multocida* or *Histophilus somni*). BRD-associated viruses were virtually zero among calves from well-vaccinated herds.

viii. Cost of Production Network

As part of surveillance programming, the BCRC continued to support the Canadian Cost of Production (COP) Network with work overseen by Canfax Research Services. The COP Network supports industry competitiveness by having Canadian beef cattle cost of production data in every province/ecoregion to guide technology transfer and research priorities. The COP Network completed its third and final year of data collection in 2023 with over 225 producers contributing to 59 benchmarks. This has been expanded with the Alberta AgriSystems Living Lab adding another 6 benchmarks for a total of 65 benchmark farms from coast to coast, representing different production systems.

Presentations of the year 3 *Future Farms Scenarios* and *Recommendations to New Producers* were recorded in January 2024 and distributed to participating producers and provincial coordinators as well as posting to the Canfax website. Fact sheets were updated for the third year of data collection for *Farm segmentation*, *adoption of GHG reducing practices*, and *recommendations for new producers*. New fact sheets were developed on *Feed Costs Under \$700 per Cow* and *Don't Waste Record Profits*. All of these can be found at Canfax.ca/COPAnalysis.

Scenarios on five BMPs were run on COP Network benchmark farms, as appropriate:

- Swath grazing (4-5 scenarios on 20 farms = 92 total)
- Bale grazing (2-3 scenarios on 34 farms = 82 total)
- Hayland Rejuvenation (5 scenarios on 25 farms = 123 total)
- Pasture Rejuvenation (3 scenarios on 57 farms = 171 total)
- Rotational grazing (3 scenarios on 47 benchmark farms = 141 total)

Focus groups were hosted in March with extension experts from across Canada to get feedback on how to present the information. Further analysis is being completed on environmental impact (via HOLOS) and the ADOPT model which will be completed later in 2024.

Total 2023/24 projected National Check-Off funding for Cost of Production Network = \$51,250

IV. Verified Beef Production Plus

Verified Beef Production Plus (VBP+) and VBP+ Delivery Services Inc. (VBP+ Inc.) deliver training and certification services to Canadian beef producers across all provinces and sectors.

VBP+ delivers training on best management practices and requirements/recommendations for successful certification. Training is delivered three ways, on-line through www.canadiancattlelearningcenter.com, and hosted by provincial coordinators in-person or through webinars.

The number of producers who have taken VBP+ training has steadily increased, with the largest percentage taken through in-person workshops. Some training has been successfully accomplished through partnerships with post-secondary institutions and auction marts. In-person training can focus on all or selected modules of the VBP+ training, depending on time availability. Modules related to On-Farm Food Safety and Biosecurity are popular and timely modules.

Work on the Agri-Assurance project, *Enhancing VBP+ to drive sustainability & market growth in Canadian beef*, started in January, after the contribution agreement was signed in November. Activities 1-3 are at the engagement, information gathering and planning stages. The certification pathways project (Activity 4) is a continuation of the previous Agri-Assurance project and continues to move through the levels of CFIA. There has been a lot of positive learning from this project, from both the industry side and the regulatory side. The process has also meant working through many tough issues. It is anticipated that the accreditation assessment will take place in fall of 2024. Next steps include decisions on new certifications to pursue including assessments of international market opportunities.

Over the 2023/24 year, there has been a decrease in numbers of certified operations, but the number of cattle under the management of certified operations have remained relatively stable. Acres under the management of certified operations continues to increase as reporting becomes more complete.

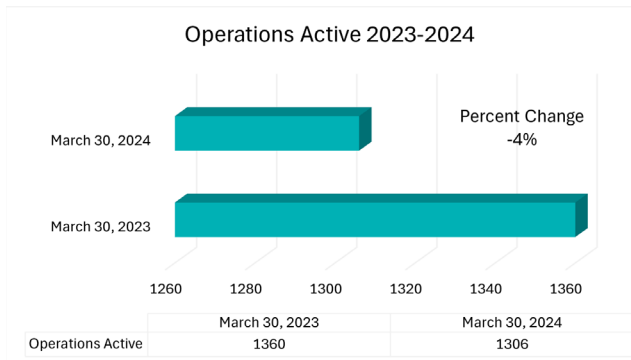


Figure 2. Active Operations March 31, 2023-March 31, 2024. Source: VBP+ internal data

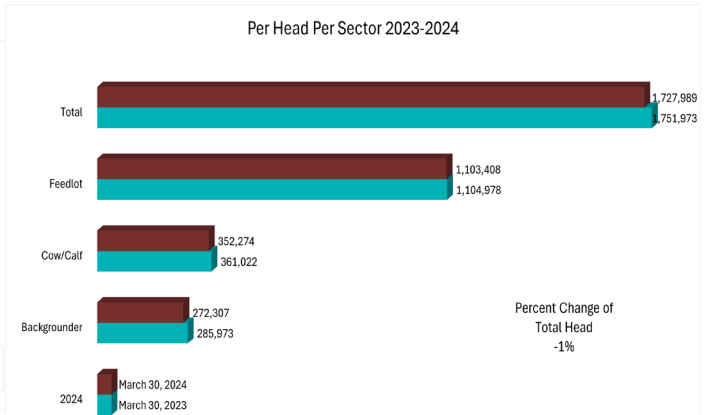


Figure 2. Head numbers under the management of VBP+ certified operations per head/per sector, March 31, 2023-March 31, 2024. Source: VBP+ internal data

Producer value attached to certification continues to be varied across regions. In Saskatchewan, numbers of new and renewed certifications remain positive due to provincial investments in infrastructure linked to animal health and biosecurity outcomes through the SCAP - Beef Cattle - Animal Health and Biosecurity Producer Program with eligibility contingent on VBP+ certification and/or training.

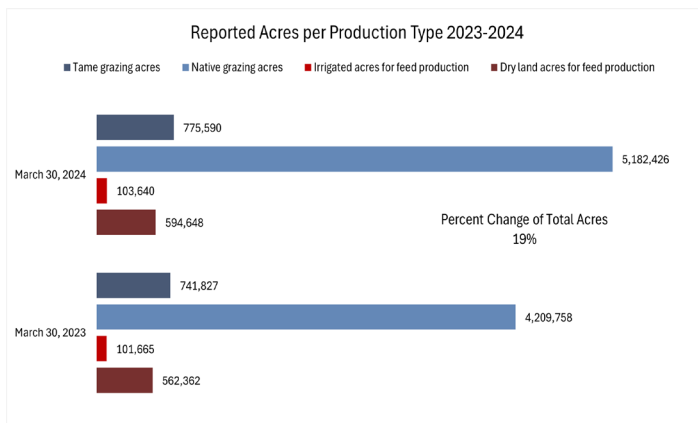


Figure 3. Acres under the management of VBP+ certified operations from March 31, 2023-March 31, 2024. Source: VBP+ internal data

VBP+ and VBP+ Inc. continue to work with partners, such as the Canadian Roundtable for Sustainable Beef (CRSB) and provincial organizations, providing background data and support for various pending initiatives to support the value of certification. It is positive that the Cargill Recognition Credit program was renewed for the 2023 year, rewarding producers who were unable to access incentives through the Cargill Qualifying Cattle Credit program, which provides per-head payments for cattle who qualify through the Certified Sustainable Beef Framework.

Total 2023/2024 projected National Check-Off funding for VBP+ = \$451,240

(includes industry allocation for the Sustainable Canadian Agricultural Partnership (SCAP) project)

V. BCRC Administration and Management

The BCRC is overseen by an operating committee of 15 cattle producers (including one ex-officio), who are appointed by the provincial producer organizations and proportionally represent the provincial allocation of the Canadian Beef Cattle Check-Off to research. The BCRC is led by an Executive Director who oversees research and extension programming development and implementation, playing a key role in establishing and refining industry research priorities in consultation with other stakeholders. The Executive Director acts as a liaison and facilitation link among the BCRC committee and the BCRC staff, CCA, the Canadian Beef Advisors, the Canadian Beef Cattle Research, Market Development and Promotion Agency, technical advisors and national and provincial interest groups with similar research objectives. The Executive Director encourages coordination of priorities and funding allocations between agencies in alignment with the *Canadian Beef Research and Technology Transfer Strategy*.

Supporting the Executive Director, the BCRC Science Director and Research and Innovation Coordinators manage priority research projects as well as projects undertaken within the Beef Cattle Industry Science Cluster. The Operations Manager supports the development and implementation of BCRC's business planning, budget management and reporting processes. The Extension and Communications Director and Extension Coordinator support the Technology Transfer & Knowledge Dissemination Strategy. The Technical Director supports the development and advancement of research and technical analysis related to beef quality, food safety, animal health and technical barriers to trade on a part-time basis. In addition to these positions, administrative, financial and technical expertise support the BCRC operations.

The BCRC Executive Director also oversees the VBP+ Business Manager who works with the VBP+ Technical Manager and VBP+ Operations Manager and various contractors and is directly responsible for delivering the national VBP+ program and overseeing VBP+ Delivery Services Inc. the wholly owned non-profit responsible for delivery of VBP+ audit delivery.

A Science Advisory Panel comprised of industry, academic and governmental scientific expertise, continues to support the BCRC's research program. This expertise helps to ensure the delivery of research plans that are directed towards industry's research objectives and achieve the outcomes desired by industry.

National Check-Off funding directed to the BCRC general administration and management expenses for 2023/24 is projected at \$725,772.

VI. Financial Notes

The BCRC fiscal year is July 1 to June 30 and therefore the BCRC audited financial statements are not included in this report. In many instances, the projected expenditures in this report reflect the year-to-date expenditures, as of publication date, and do not reflect BCRC's entire fiscal year. Due to the nature of the BCRC's funding cycle, this will result in a variance between this report and the close of BCRC's year end on June 30th, as a large volume of BCRC project transactions occur between May and June of each year.

The BCRC 2023/24 financial summary and CCA audited financial statements will be available to the Agency after August 2024.

Projected Canadian Beef Cattle Check-Off funding allocated to research programming in 2023/24 is outlined in various sections of this report and includes the following:

Beef Science Cluster research projects = **\$1,431,197**

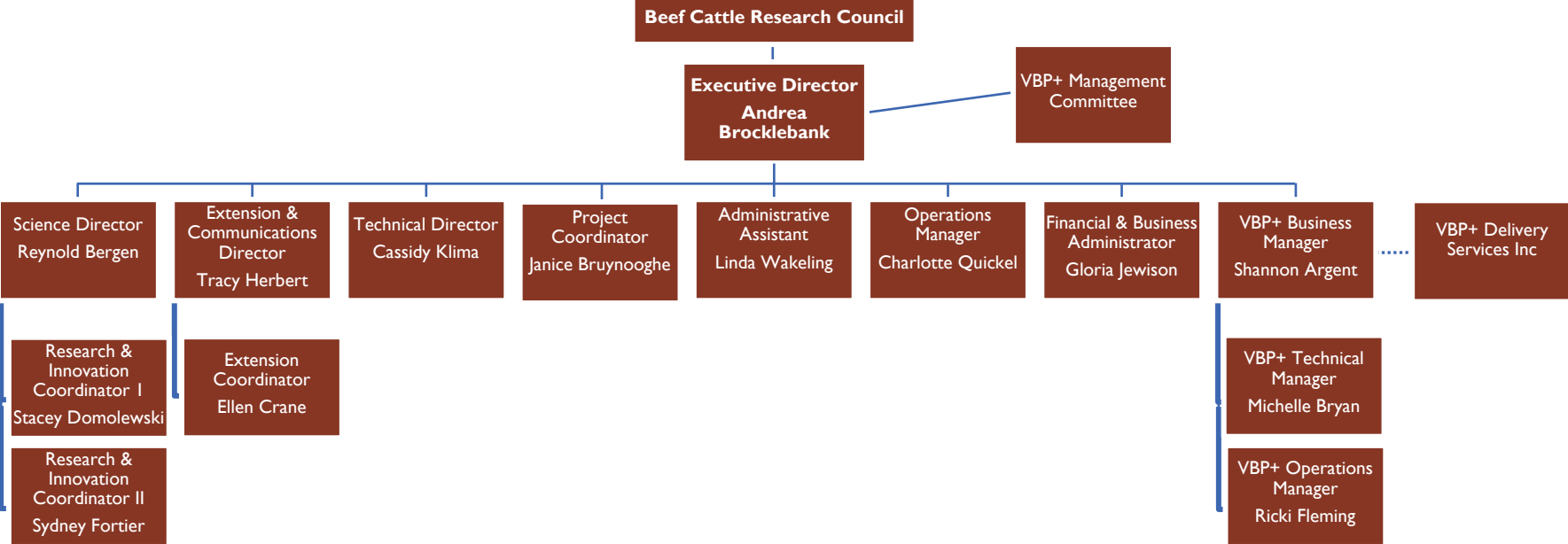
Other BCRC research projects = **\$3,299,785**

Verified Beef Production Plus = **\$451,240**

BCRC general program management and administration = **\$725,772**

Total Beef Cattle Check-Off funding = **\$5,907,994**

VII. Appendix – BCRC Organization Chart



Note: In addition to permanent positions, BCRC and the VBP+ Program hire services from various experts, on a contractual basis as required