Ontario Beef Research Strategy

2025 - 2028

Contents

Introduction

This three-year Research Strategy (the "Strategy") has been developed to guide the Beef Farmers of Ontario's (BFO) investments in research and knowledge translation and transfer (KTT). The Strategy provides a roadmap to support a competitive, sustainable and resilient Ontario beef industry by identifying priority areas for research, collaboration, and application of knowledge.

BFO is fully committed to research and its importance in driving competitiveness and innovation in the Ontario beef sector. The goal of BFO's Research Program is to increase the development, adaptation, assessment, and easy adoption of on-farm tools and technologies that help beef farmers respond to changing demands. BFO contributes over $1.1 million annually to support research initiatives, including a three-year research call, and funding to the Beef Cattle Research Council (BCRC) and the Livestock Research Innovation Corporation (LRIC). BFO also puts strong emphasis on producer engagement, which often encompasses KTT, connecting farmers with researchers and the latest in beneficial management practices, industry resources and current technologies. BFO has made additional investments in recent years to address immediate sector challenges and provincial/cross-sector initiatives, such as the Living Labs – Ontario project.

Annual Investment in Research and KTT

- Beef Cattle Research Council
- BFO Research Call
- Producer Engagement (including KTT)
- Livestock Research Innovation Corporation
- Living Labs - Ontario
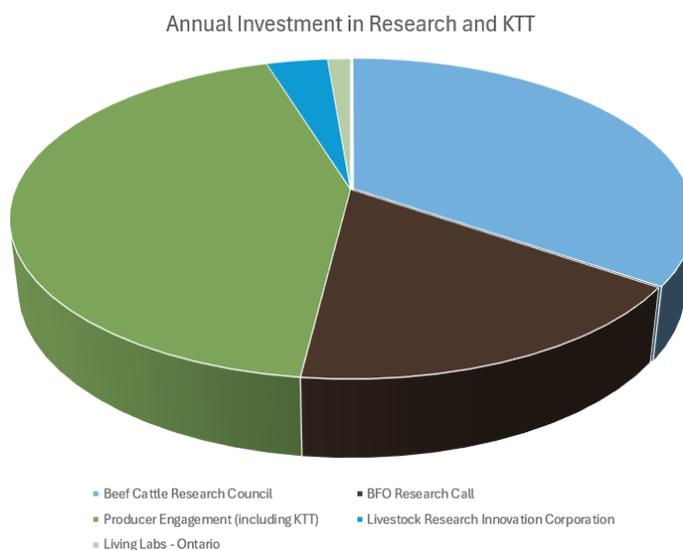
The Strategy is organized around five areas that encompass specific outcomes and research objectives: **Animal Health & Welfare, Forage & Feed Production, Feed Efficiency & Utilization, Beef Quality & Food Safety, and Knowledge Translation & Transfer**. While KTT is included as a distinct theme with dedicated questions and considerations, it is also embedded across all themes and is recognized as essential to ensuring research investments deliver measurable value to producers and the broader industry.

The Strategy was developed through consultation with a broad range of stakeholders, representing industry, government, producers, and academia. A priority-setting session was held on December 8, 2025, in person, with a virtual participation option.

The session, facilitated by BFO and LRIC, included presentations that produced context on current research activities, funding landscapes, and emerging gaps and opportunities within the beef sector:

- **Kelly Somerville, Livestock Research Innovation Corporation (LRIC)**, provided an overview of Ontario's beef research and innovation ecosystem and considerations for strategic investment (*Appendix A*).

- **Dr. Reynold Bergen, Science Director, Beef Cattle Research Council (BCRC)**, shared insights into the national beef research strategy development processes, currently being worked on. Including their approach, themes of focus, and goals for application of the document (*Appendix B*).
- **Chad Mader, Beef Cattle Specialist, Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA)**, summarized provincially funding beef research since 2021, noting areas of strength and identifying gaps, particularly in market research and beef quality and food safety. Also, suggested altering the structure from the last priority setting event to generate outcomes and research questions that are more specific and less vague (*Appendix C*).
- **Dr. Katie Wood, Associate Professor, Animal Biosciences, University of Guelph**, provided an overview of beef research conducted at the Ontario Beef Research Centre (OBRC), highlighting current projects, emerging researchers, and collaboration across departments and institutions, including partnerships with OBRC-New Liskeard and Université du Québec en Abitibi-Témiscamingue (UQAT) (*Appendix D*).

As part of the consultation process, participants completed a SWOT analysis (*Appendix E*) to identify strengths, weaknesses, opportunities, and threats facing the Ontario beef industry. Guided discussion following the SWOT analysis focused on identifying priority research questions and areas of focus that stakeholders felt were critical to supporting a thriving and competitive beef industry in Ontario.

The industry remains committed to producing high-value protein that meets evolving consumer expectations. Healthy animals, cared for by skilled professionals using appropriate technologies, are central to achieving strong animal welfare outcomes while meeting environmental and societal expectations. Sustainability, particularly environmental and economic, is embedded across all themes and outcomes within the Strategy.

Guidance for Implementation of the Strategy

This Strategy identifies key research objectives and questions to guide BFO's investment decisions over the next three years. These objectives are intended to reflect industry-wide needs rather than individual producer-specific requests, with a focus on areas where public and producer-led investment is most needed and where private-sector funding is unlikely to address gaps.

Participants highlighted the importance of:

- Leveraging existing research and funding opportunities
- Avoiding duplication by aligning with national and provincial research efforts
- Collaborating across departments, institutions, sectors and jurisdictions
- Identifying opportunities to adapt and apply research conducted elsewhere to Ontario conditions

Stakeholders emphasized that research alone is insufficient without effective mechanisms to translate findings into practice. Knowledge transfer and translation (KTT) is therefore a core component of this Strategy. Participants noted that researchers are often not incentivized or are

under-resourced to deliver KTT activities, contributing to a gap between research outcomes and on-farm adoption. KTT considerations are integrated across all research themes, with an emphasis on clear communication, producer engagement, and practical application.

To support implementation, the SWOT analysis suggests the following should be top of mind: proof and trust (credible metrics and evidence), producer-facing KTT and engagement (clear on-farm applicability and producer input), profitability linkages (tie outcomes to bottom-line impacts), systems integration and coordination (reduce fragmentation across the value chain), and addressing capacity constraints (labour, veterinary access, processing/infrastructure through partnerships and technology).

SWOT Analysis Summary

This section provides short Summaries of the Strengths, Weaknesses, Opportunities, and Threats to the Ontario beef industry that were identified by stakeholders. Full notes from the SWOT analysis can be found in *Appendix E*.

Strengths

- Strong research capacity and facilities with BFO/BCRC support
- High-quality beef, strong markets, and strategic location near GTA/exports/processing
- Strong sustainability story (low GHG, grasslands, marginal land use) and circular inputs (by-products, manure value)
- Growing beef × dairy advantage, access to quality genetics, and strong welfare/food safety credibility
- Production diversity and trade/market flexibility

Weaknesses

- Weak communication/KTT to producers and limited producer involvement in research prioritization
- Limited public/decision-maker education resulting in low leverage and misunderstanding
- Funding, labour, vet access, and research capacity constraints; producing beef often as a secondary income
- Processing/infrastructure gaps (aged, capacity, biosecurity/traceability), segmented supply chain
- Slow tech adoption, inconsistent grading, incomplete records, and slow pace of change (demographics)
- Faculty numbers
- Under-utilized facilities (Elora Beef Research Center, Meat Lab at the University of Guelph)

Opportunities

- Improve profitability via feed efficiency, cost of production benchmarks, and "optimize vs maximize" decision tools

- Align carcass/quality targets with consumer and processor needs; study willingness-to-pay in a diverse market
- Scale tech/Automation/Artificial Intelligence (AI) (surveillance, early disease detection) and leverage external funding/partnerships
- Quantify emissions/sequestration for carbon markets
- Rebuild herd and accelerate genetics (incl. dairy x beef integration)
- Expand integrated land-use systems (marginal land, community pasture, silvopasture, solar grazing, cropland and forages)
- Strengthen traceability
- KTT/education
- Co-funding research chairs (with enhanced Alliance funding)
- Proposed Protein Institute at the University of Guelph

Threats

- Environmental scrutiny (GHG/water/waste) and carbon-footprint comparisons vs other proteins
- Social license risks (welfare, AMR, implants, distrust of science, anti-livestock narratives)
- Foreign Animal Diseases, animal health product resistance, and vet shortages
- Processing concentration/capacity limits and regulatory burden and slow approvals
- Labour shortages, trade barriers, land loss/urban expansion, climate volatility, rural infrastructure gaps, and cybersecurity
- Reductions to research funding by partners (e.g. AAFC)

Cross-SWOT Analysis Themes

Themes were detected with topics showing up across all categories:

- **Make "proof and trust" a priority**
  Prioritize credible measurement and clear evidence on sustainability (GHG/water/waste), welfare/food safety, and traceability so the sector can respond to scrutiny, comparisons to other proteins, and social licence risks.
- **Redesign producer-facing KTT so research is usable**
  Build a more targeted, producer-friendly communication loop that includes producer input on prioritization and consistently translates research into "how this applies on-farm," recognizing limited time/capacity to receive information.
- **Focus research and messaging on profitability as the adoption engine**
  Tie key research themes (feed efficiency, tech adoption, carcass/quality targets, benchmarking/cost of production) directly to bottom-line outcomes to address uncertainty, secondary-income realities, and slow uptake.
- **Strengthen system coordination, data collection, and standards across the value chain**
  Reduce fragmentation by prioritizing approaches that improve consistency (grading), record keeping, and data sharing, and that better connect segments (cow–calf/background/feedlot/processing) to support efficiency, traceability, and market alignment. Crop-livestock relationship.
- **Target constrained capacity with partnerships and technology**

Prioritize initiatives that address labour, vet access, and processing/infrastructure constraints using technology/AI and partnerships (facilities like meat lab, academic institutions, external funding) to expand practical capacity and resilience.

Research Priorities

Under each of the five overarching themes, there are specific objectives and research questions that the industry has identified as important considerations when making research investments. While not all areas may be funded simultaneously, each theme represents a critical component of a balanced and forward-looking research portfolio for the Ontario beef industry. The order listed is not representative of their prioritization.

Animal Health and Welfare

- Why do some cattle not respond well to treatment and develop a variety of chronic diseases? How can this be prevented?
- Research technologies for early detection and identification of disease (including but not limited to respiratory illness and pink eye).
- Can new management methods be found to prevent resistance (i.e. anthelmintics and antibiotics).
- Promotion of standardized preconditioning best management practices across cow-calf producers.
- Benchmarking for calf health parameters
- How can the industry continue to build on adherence to the animal care codes practice?
- Research potential correlations between respiratory diseases and ventilation in feedlot barns.
- How do cattle handing facilities impact the economic and health aspects of cattle on pasture, in feedlots, and in auction barns.
- Exploring the relationship between animal comfort, handling practices, facilities, and animal resiliency (response to vaccinations, treatments).

Forage and Feed Production

- How can beef production systems be better integrated into cropping systems?
- How can cover crops and crop residue be better utilized in beef production?
- What are sustainable strategies for handing difficult weeds in forages?
- Research the benefits of cross-species grazing (e.g. cattle and sheep).
- What is the economic and environmental return of measuring pastures in an Ontario grazing system, and what is the ideal methodology for measurement?
- What is the current and potential carbon sequestration capacity of Ontario's existing pastures? How does management influence carbon stocks over time to support expansion and collaboration among groups (e.g. Ducks Unlimited, conservation authorities, nature conservancy organizations, and CANZA)?

- What is the greenhouse gas mitigation potential of diverting food waste and agro-industrial by-products from landfills and upcycling them as livestock feed in Canada, across beef feedlots and other major livestock sectors?
- Research focused on forage breeding specific to Ontario (Canadian) climate conditions, including regional variety trials.
- KTT focused on opportunities for improved performance that can be achieved with pasturing beef cattle.

Feed Efficiency & Utilization

- What are ways to make cattle more efficient on pasture with improved forage utilization and grazing management?
- Improving genetic evaluations that directly or indirectly influence traits that impact economic outcomes for beef producers.
- How do barn structures and flooring affect traction and sound footing, and how does it relate to feed conversion and lameness?
- How can beef producers utilize digital technology to address labor shortages both on the farm and at processing?
- What are the best ways to measure and/or identify efficiency in the beef cow herd?
- What are the best management practices and economic considerations for forage-feeding dairy × beef calves?

Beef Quality and Food Safety

- How do genetics impact meat quality and nutritional components for the consumer?
- What motivates consumers and their willingness to pay for specific attributes in beef?
- What technologies can be developed or adopted to improve and integrate traceability across the entire beef supply chain and provide value to the farmer?
- What role can data, technology, or standardized practices play in reducing inconsistencies in beef grading?

Knowledge Translation and Transfer

- What methods can be employed to effectively connect with and engage Ontario producers, recognizing the diversity of production systems, regions and business models across the province?
- How can cross sector social research support the development of a more collaborative ecosystem for research lifecycle, including implementation, realization and commercialization?
- What is the most effective approach for communicating research findings to Ontario beef producers in ways that are accessible, relevant, and easy to understand and apply when appropriate?
- How can KTT needs be identified based on current practices, both within the beef sector and across the livestock/agricultural sectors (e.g. importance of vaccination protocols.

Conclusion

This Strategy provides a roadmap to guide BFO's research and KTT investments in support of a resilient, innovative, and sustainable Ontario beef industry. Through strategic investment, collaboration, and effective knowledge transfer, the Strategy aims to ensure that research investments deliver tangible benefits to producers, the industry, and consumers.
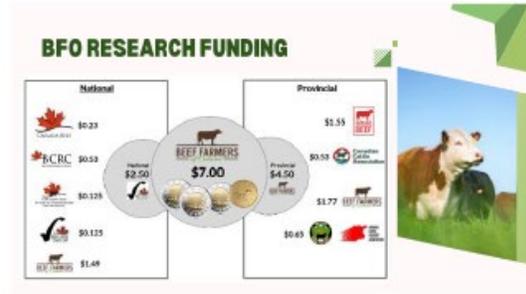
Appendices

Appendix A: LRIC Presentation

Presentation by Kelly Somerville, Livestock Research Innovation Corporation (LRIC).

OBJECTIVES FOR CONSIDERATION AT THE NATIONAL LEVEL:

- Benchmark antibiotic use in Canadian beef production under 'health management' as part of national surveys
- Improve rapid diagnostics for individual animal health
- Strengthen early detection of emerging diseases (e.g., bluetongue)
- Develop alternatives to antimicrobials (vaccines, bacteriophage, nutritional technologies)
- Identify and advance new anti-infective agents

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THEME 3: ECONOMIC SUSTAINABILITY

OUTCOME

Develop processes, procedures, technology, and equipment to help create a more economically sustainable Ontario beef industry.

SUB-CATEGORIES:
- *Genetics: gene technologies for feed conversion, quality (marbling, tenderness), disease resistance, and GHG reduction*
- *Meat processing: technologies and systems to improve productivity and address labour shortages*
- *Feed efficiency: nutritional strategies to increase feed efficiency by 5–10% and access hormone-free markets*

OBJECTIVES

- Identify optimal weaning weights for maximum profitability in all sectors
- Implement a system that equitably distribute returns along the value chain
- Develop an analysis tool for objectively interpreting grading results
- Use market signals to adjust management to maximize carcass values
- Develop financial modeling tools to allow producers to undertake a COP based evaluation of new market opportunities
- Understand the economics of developing a beef industry in Northern/Eastern Ontario

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THEME 4: FORAGES/FEEDS

OUTCOME

Develop forages and feed systems that meet nutritional needs, increase performance, optimize animal health and lower production costs.

SUB-CATEGORIES:
- *pasture systems,*
- *cover crops,*
- *field crops,*
- *feed systems (including feed quality in storage and bunk and 5–10% feed efficiency improvement)*

OBJECTIVES

- Improve cow efficiency through new and existing feeds and feeding systems
- Develop novel methods to utilize by-product and alternative feeds
- Give producers tools to build nutritional strategies that meet carcass targets and market demands
- Establish a forage research program targeting 10% yield increase over 10 years
- Develop financial modeling tools to allow producers to undertrial alternative energy sources to corn

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THEME 5: FOOD SAFETY AND QUALITY

OUTCOME

Ontario beef continues to be safe, high quality, and consistently meeting consumer expectations.

FOOD QUALITY OBJECTIVES

- Complete information flow from grading to producers enables improved consistency and reduced defect rates
- An objective tenderness standard and test is developed and operational
- Market signals drive genetic selection and carcass quality improvements

FOOD SAFETY OBJECTIVES

- Complete supply chain traceability
- Consumer attitudes toward new technologies (irradiation, GMOs) quantified and benchmarked
- Potential pathogens and food safety risks (microbial, chemical, physical) identified and quantified
- Beyond carcass wash, incidence of microbial-resistant organisms is quantified, benchmarked, and reduction technologies implemented

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THEME 6: MARKET RESEARCH (CONSUMER)

OUTCOME

Accurate and timely market intelligence enables the industry to produce Ontario beef that continually meets or exceeds consumer expectations.

RESULTS WILL HIGHLIGHT:
- *What consumers are buying and why*
- *Product characteristics consumers will pay a premium for*

OBJECTIVES

- Producers operate a market intelligence system designed to forecast future consumer needs
- The human health attributes of beef and their costs of production are understood
- Targeted market research to increase beef's share of the consumer market is undertaken regularly

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OBJECTIVES FOR CONSIDERATION AT THE NATIONAL LEVEL:

- Effective ways for consumers to identify desirable product traits
- Methodologies to flow value throughout the entire value chain
- Direct surveys of consumer desires (beyond "vote with their wallet")
- Improved understanding of consumer demands and how to communicate with them

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LOOKING AHEAD TO THE NEW STRATEGY

USING THIS AS A SPRINGBOARD FOR 2025+

- Which themes and objectives remain highly relevant today?
- Where did the sector make measurable progress since 2021?
- What emerging issues (e.g. climate, labour, technology, consumer expectations) are missing or under-weighted?
- How should BFO re-focus or re-prioritize themes for the next investment strategy?
- What kind of research investments will most directly support growth and success of Ontario's beef industry over the next 5-10 years?

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THANK YOU

Your time, experience, and perspective are critical to shaping the future of beef research in Ontario

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Appendix B: BCRC Presentation

Presentation by Dr. Reynold Bergen, Science Director, Beef Cattle Research Council (B

CRC).

If ABP is using checkoff funding from Alberta producers to fund research... it had better benefit the competitiveness of Alberta's beef industry!

If BFO is using checkoff funding from Ontario producers to fund research... it had better benefit the competitiveness of Ontario's beef industry!

Animal Health & Welfare (Outcome 1 / 4)

1. Improved prevention and mitigation of animal disease issues (particularly preweaned calf health, respiratory diseases, digestive upsets, liver abscesses, and lameness)

- Better understanding of disease processes and the microbiome
- Identify key management practices that cost-effectively maintain calf health (birth through feeding)
- Develop and validate the effectiveness of vaccines and other novel health practices (e.g., probiotics) to maintain health, prevent disease and reduce antibiotic use

BCRC

Animal Health & Welfare (Outcome 2 / 4)

2. Improved prevention and mitigation of animal welfare issues

- Managing procedural and chronic pain associated with castration, branding, dehorning and lameness
- Develop cost-effective alternatives to branding, spaying
- Euthanasia
- Handling and transport of very large finished cattle

BCRC

Animal Health & Welfare (Outcome 3 / 4)

3. Rapid, accurate and cost-effective prediction, detection, and diagnosis of economically important production limiting diseases to reduce the need for and preserve the effectiveness of antibiotics.

- *Prediction* – are they likely to get sick?
- *Detection* – are they actually sick?
- *Diagnosis* – why are they sick / what's making them sick?

BCRC

Animal Health & Welfare (Outcome 4 / 4)

4: Effective surveillance of production-limiting diseases, production practices, antimicrobial use and antimicrobial resistance

- antimicrobial use and resistance – CIPARS
- management practices, animal health and productivity (cow-calf and feedlot) across Canada

TIE TO ACTIONABLE INFORMATION FOR PRODUCERS / extension

BCRC

Forage and Feed Production (1 / 3)

1. Cost-effectively improve the agronomic performance, yields, nutritional quality and palatability of annual species for grazing, feed grains or stored forage
- **Breeding** - feed grain and silage varieties – yield, agronomic performance, harvest window, lodging, and nutritional quality
- **Variety trials** - varieties and mixtures on a meaningful scale (interprovincial collaboration is encouraged) to inform producer seed selection decisions
- **Agronomic and harvest practices** to optimize yield and nutritional quality for hay, greenfeed and extended grazing
- **Harvest timing and agronomic recommendations for silage** production, including optimum fertilizer rates
- **Effects of cattle grazing on soil compaction**, its effects on future crop performance, and cost-effective strategies to alleviate it

BCRC

Forage and Feed Production (2 / 3)

2. Improve the management and productivity of native/naturalized pastures to enhance profitability and discourage land conversion
- Management to optimize, maintain or restore rangeland productivity
- Cost-effective management strategies to control the spread of invasive weeds

BCRC

Forage and Feed Production (3 / 3)

3. Improve management and productivity of tame pastures and hay stands - systems based
- **Breeding** - improved germination, emergence, yield, digestibility, salinity, disease resistance, drought and flood tolerance, reduced fall dormancy, and improved winter hardiness and plant persistence
- **Variety trials** - species, varieties and mixtures on a meaningful scale to inform producer seed selection decisions
- **Agronomic practices** to improve germination, emergence, salinity, and/or drought and flood tolerance, longevity, digestibility.
- **Optimal fertilization** rates to improve forage yield and performance
- **Grazing management** to improve yield, resilience, longevity and animal performance
- Develop recommendations for **rest period requirements** of tame pastures in high moisture climates

BCRC

Feed Efficiency and Utilization (1 / 3)

1. Investigate feed processing, by-products, additives, supplements or other feeding strategies that optimize productivity, and profitability.
- Develop and/or validate **rapid tests for antinutritional factors** (ergot, nitrates, etc.)
- Characterise the **nutritional value of byproducts** that are available in significant volumes (e.g., hemp, lentil, and camelina byproducts)
- **Improve digestibility** of high fiber / recalcitrant feedstuffs and byproducts
- Develop cost-effective methods to measure, and feeding strategies to ensure **uniform supplement intake on pasture**

BCRC

Feed Efficiency and Utilization (2 / 3)

2: Improved feed efficiency in the cow-calf and feedlot sectors through animal selection, genetics, and breeding.
- Evaluate **metrics for measuring feed efficiency in cows on pasture** that can be used for selection by beef producers and evaluate subsequent impacts on feed efficiency in the feedlot

BCRC

Feed Efficiency and Utilization (3 / 3)

3. Optimize animal performance and feed efficiency in beef on dairy animals.
- Evaluate the **effects of Growth Enhancing Products** (GEP) in BonD animals and decide if we need separate protocols
- Investigate how **early life management** impacts feed efficiency later in life
- Optimize the **duration of the grower and backgrounding** periods
- ((Cost-effective ways to improve air, water and soil outcomes associated with confined cattle feeding operations))

BCRC

Reproduction

1: 92% of cows wean a calf each year through cost-effective improvements in nutritional and overall management

- **More precisely define micronutrient requirements** and develop regionally appropriate supplementation recommendations for breeding cattle of different ages throughout the production cycle
- **Pasture supplementation strategies** to maintain mineral levels (e.g., timing, delivery method etc.)
- Strategies to increase intake, absorption and bioavailability of minerals in the presence of **antagonists**
- Strategies or technologies to **simply and cost effectively improve water quality** in remote areas (with specific focus on sulphates and mineral load)

BCRC

Beef Quality – in progress

1. Improved carcass and beef quality

2. Define, validate and enhance the consumer appeal of Canadian beef in domestic and international markets

3. Define, validate and enhance the functional attributes of Canadian beef in domestic and international markets

BCRC

Food Safety – in progress

1. Ensure food safety along the beef supply chain
- cost-effective technologies targeting multiple pathogens in beef production and processing facilities, including *E. coli* and biofilm forming bacteria
- **strategies to effectively clean** key spots in processing plants that are prone to contamination and difficult to clean

BCRC

Food Safety

2: Validate the efficacy and safety of new technologies in support of the rational regulatory approval and adoption of improved food safety interventions throughout the supply chain

- Develop cost-effective cleaning technologies that reduce the need for (hot) water, sanitizers and labor in large and small processing facilities
- Conduct research to proactively identify and resolve potential market access concerns for Canadian beef

BCRC

Environmental Sustainability

- WAS a standalone priority in the previous Strategy
- Lots on GHG, soil C, biodiversity
- Concern was that environmental sustainability shouldn't be divorced from the context of production realities
- We *think* we'll embed environmental priorities within the other pillars of the Strategy this time.

BCRC

Can BFO use the National Strategy?

If BFO is using checkoff funding from Ontario producers to fund research... it had better benefit the competitiveness of Ontario's beef industry!

BCRC

How can BFO use the BCRC strategy?

1. Is this a m... ...beef farmers?

2. Does this ... ...t need extension / adoption?

3. Is a made ... ...ation necessary?

4. Does Onta... ...search capacity to answer this question?

Questions?

www.BeefResearch.ca

Appendix C: OMAFA Presentation

Presentation by Chad Mader, Beef Cattle Specialist, Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA).

Slide 1 — Forages/Feeds

Forages/Feeds

- Schneider
  - Pasture utilization
- Duarte
  - Supplementation options to improve performance, carcass yield and meat quality
- Wood
  - Gut-health supplement for feedlot cattle – performance, efficiency and gut health

Ontario

Slide 2 — Food Safety and Quality

Food Safety and Quality

- Johnson
  - Depletion of dexamethasone in cattle
- Duarte
  - Supplementation options to improve performance, carcass yield and meat quality

Ontario

Slide 3 — Market Research

Market Research

Ontario

Slide 4 — Summary

Summary

Theme	Number of Funded Projects
Environmental Sustainability	3
Animal Health	9
Economic Sustainability	3
Forages/Feeds	3
Food Safety and Quality	2
Market Research	0

→ Animal Health – thoughts?

Ontario

Slide 5 — Areas Lacking Attention

Areas Lacking Attention

Food Safety and Quality
2 projects fit the category, but not really the objectives

Market Research
Is this an OMAFA-funded project area?

Ontario

Slide 6 — Why?

Why?

$	Covered outside of OMAFA-funded projects?	
Lack of interest	Unlikely Reason for a group like this
Lack of capacity	Potentially – what do we do about it?
Structure of the priority	this is what we can control

Ontario

Example – Animal Health

"Develop processes and technologies that limit the use of antibiotics in beef production"

- Is there a problem to solve?
- Is there a question to answer?
- Is this research?

Ontario

Example – Market Research

"Producers have developed and are operating a market intelligence system designed to forecast future consumer needs."

- Is there a problem to solve?
- Is there a question to answer?
- Is this research?

Ontario

Structuring Our Priorities

?
PROBLEM TO SOLVE?

QUESTION TO ANSWER?

⊕
IS THIS RESEARCH?

Ontario

Conclusion

- All research priorities are relevant issues, but not all relevant issues are research priorities!
  - Clear
  - Concise
  - Focused
  - Realistic

Ontario

Appendix D: UofG Presentation

Presentation by Dr. Katie Wood, Associate Professor, Animal Biosciences, University of Guelph.

Cow-Calf

Pasture systems
- Spring and fall planted cereals and forages (Schneider)
- Fertilizer on pasture (Schneider)
- Simple vs complex cover crops (Schneider)

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Work at OBRC- New Liskeard

- Grazing management (E. Lyons)
- Plot Work (E. Lyons)

Opportunity for new collaborations with UQAT ?

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Feedlot

- Nutrition
  - Cr and Met supplementation (Duarte)
  - GAA and Met supplementation (Duarte)
  - Yeast (Wood)
  - uNDF inclusion rate (Wood)
- Immunology
  - Respiratory disease (Caswell)
  - Genetics of immune response weaned calves (Mallard & Hodgins)

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Dairy Beef/ BeefxDairy

- Renovations to Ponsonby
- Lead by M. Steele (and Reneaud-transport)
- Early life nutrition
  - Multiple experiments

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...Some New Faces

- Dr. Kristen Edwards
  - Dept of Population Medicine
  - Interests in calf health
  - Started spring 2025
  - Cow trial in the works
- Con-Ning Yen
  - Dept of Animal Bioscience
  - Muscle biology/mitochondrial health
  - Starts March 2026

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...Some New Collaborations

Visualized Weights
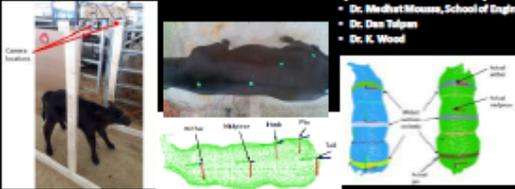
- Linear measures predict calf BW
- Key measures detected by visual systems
  - Dr. Medhat Moussa, School of Engineering
  - Dr. Dan Tulpan
  - Dr. K. Wood

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Appendix E: SWOT Analysis

Strengths

Raw Notes

- Facilities
- BCRC (National connection and collaboration)
- BFO's $ to keep researchers interested in Beef and beef related research
- Making progress, but progress takes time
- BCRC effective KTT, also have significant budget towards KTT
  - Push for BCRC to support provincial KTT
  - Study which form of KTT is more effective for target audiences
- Price of cattle (strength for cow-calf sector)
- Canadian beef production low GHG
  - String environmental stewardship
  - Particularly grassland management
  - Ability to use marginal lands
- Canadian beef is a high-quality product and regarded as such in the marketplace
- Consumption is increasing
- Consumer demand and confidence is growing
  - Increase in protein consumption all around
  - Dietary trends like carnivore and keto supporting beef intake
  - Beef being seen as a healthy option
- Ontario specifically capitalizing on the beef x dairy market
  - We have the capacity to support growing beef x dairy
  - There is a genetic advantage to beef x dairy as dairy has greater predictability in breeding
  - Opportunity for research (example how calves show illness) as the dairy cross brings in greater levels of consistency
- Ontario beef production has historically struggled with land prices. Current beef market means that cattle are currently a competitive land use comparable to crops

Research Questions

- How does colostrum intake (bioactives and passive immunity) follow an animal through to the feedlot
  - Opportunity for beef x dairy research
- Another beef x dairy research opportunity is in reproductive physiology
  - Lack of reproductive physiologists in Canada to conduct the research
- Economics study comparing beef production to mainstay crops (example beans)
  - Could potentially lead to getting cattle on new acres as part of a conventional crop rotation
- Protein comparison: protein is not ubiquitous across livestock products
  - Compare full nutrient profile of various protein sources; vitamins, amino acids, digestibility, etc.
- Explore using thoracic ultrasound to predict high risk cattle as an improvement over current protocol of rectal temperatures
- Early disease detection
  - Dairy is leading in this area; can we borrow research from dairy and apply to beef?
  - Explore viability of reusing boluses to make it more feasible for beef producers
- Explore sector adoption of the optiweigh system
  - What are the barriers to adoption
  - What are the advantages for farms which have installed
- Investigate what the consumer threshold is for what they are willing to pay for beef products
  - Currently sustaining prices, we would not have anticipated
  - Gain a better understanding of the retail market
  - Potential to partner with a retailer or processor?
- Beef cattle are upcyclers, can survive on marginal land
  - Investigate beef cattle system effectiveness in rehabilitating marginal land
  - Ontario is unique and can grow beef in a variety of production systems to feed niche/specialty markets (example grass fed)
- Ontario is well positioned with the largest consumer market at our door (GTA) and proximity to export channels
  - Southwestern Ontario is the food processing centre of Canada
  - Potential to explore value add meat processing
  - Opportunity for commercialization of processes
  - *Is this a BFO priority currently? Thought was not at the moment but could be in future*
- Strength is the overall quality of Canadian/Ontario beef
  - Breed specific quality studies for non-angus
- Shifting consumer markets
  - growing ethnic diversity amongst Ontario consumers
  - Increasing international market share for Ontario and Canadian beef
  - Research required to understand the values and demands of these demographics
  - Potential export opportunities: for example, Africa has a higher value for outside rounds
- Animal care and welfare of Canadian/Ontario beef production one of the strongest in the world straight from calving to harvest
  - We have strong regulations and food safety standards
  - Always opportunities to research animal care standards in production/processing systems
  - Additionally, how aware is the public of these standards?
  - Research opportunity around the updates to the code of practice for painful procedures
  - Research around the level of producer adherence to the code

- - What are the true on-farm levels of BMP adoption
- Is consumer research in Ontario feasible at this time for BFO to access? Thought is that we are currently limited by researcher capacity in this area
  - It is both research and KTT priority
  - Example of how other demographics are tackling this; Argentina has a beef "Sommelier" accreditation, similar to a wine Sommelier, this trained expert exclusively studies how to prepare and pair beef
- Opportunity to bring human nutritionists into protein, specifically beef, research
  - UoG launching their protein institute could align with this research need
- Validating newly commercialized e-fencing
- Researching crop residue as feed source; efficiency/cost/feed value comparison across various crops
  - Cows as part of a cropping system
  - Link research with the story of soil health
- Huge strength is our world class research station and staff
  - Meat lab is an underutilized asset
- Research on the value of beef manure to grow crops
  - Feedlots with mixed farming have a huge advantage
  - Research the organic matter value to soil health improvement
  - Assign an accurate dollar value to not just the product composition, but to the soil health/environmental impact
  - Crop farmers are more willing to pay if you can put it in soil health context
- Access to mew genetics across the Canadian market is a strength
- Another strength in Ontario is access to bi-products (bakery waste, distillers, etc.)
  - Always potential to research new bi-products to be used for beef feed
  - Help close the loop on food waste; great KTT potential for public
- Trade opportunity in Ontario is a strength
  - Research required on the ideal finishing standards for various markets
- Beef production system in Ontario is a good story – not only the cattle on grass
- Advantage in Ontario that we have a more favourable climate for beef production
  - KTT opportunity to share the National Beef Sustainability Assessment & Strategy (NBSA)
  - Lower environmental footprint; land, diesel, inputs, etc
- KTT opportunity to engage food influencers
  - Food trends around off-cuts seeing surging demand driven by tiktok trends
- Need a paradigm shift for all stakeholders

Summary: Strengths

Research capacity + infrastructure
- Strong facilities and world-class research station and staff
- Meat lab is an underutilized asset with strong potential
- BFO funding helps keep researchers engaged in beef and beef-related research
- Progress is being made (recognition that progress takes time)

Collaboration + knowledge transfer
- BCRC provides strong national connection/collaboration
- BCRC is effective at KTT and has meaningful budget/resources dedicated to KTT
- Opportunity to leverage BCRC support to strengthen provincial KTT

Market + product reputation

- Canadian/Ontario beef is high quality and well regarded in the marketplace
- Strong cattle prices (particularly a strength for the cow-calf sector)
- Ontario is well positioned near a large consumer market (GTA) and close to export channels
- Southwestern Ontario is a major Canadian food-processing region (supports market access and potential value-add)

Environmental + production-system strengths
- Canadian beef production is comparatively low GHG with strong environmental stewardship
- Strong grassland management
- Ability to use marginal lands effectively
- Ontario has a favourable climate for beef production
- Beef production has a strong "system story" (not just cattle on grass—stewardship and resource use)

Feed + circular-economy advantages
- Access to by-products (e.g., bakery waste, distillers grains) as feed inputs
- Strong potential to help close the loop on food waste (and strong public/KTT story)
- Manure value to cropping systems is a strength—especially for mixed farms with feedlots

Ontario-specific sector opportunities
- Ontario is capitalizing on the beef × dairy market and has capacity to support growth
- Beef × dairy offers genetic/predictability advantages (more consistent outcomes)
- Access to new genetics across the Canadian market is a strength

Animal care, welfare, and food safety
- Strong animal care and welfare standards across the full chain (calving to harvest)
- Strong regulations and food safety standards; credibility and trust advantage

Trade and market flexibility
- Trade opportunity is a strength
- Ontario's production diversity supports multiple systems and niche/specialty markets (e.g., grass-fed)
- Ability to tailor finishing standards/production systems to fit different markets

Weaknesses

Raw Notes

- Decreasing funding
- Critical Mass – BFO funds are critical, lack of faculty at UofG
- Coordination of extension
- Unrealistic timelines for research results
- Priority setting process is disjointed across organizations – different dates, different timelines
- Progress is not always picked up – economics plays significant role in the beef industry

During the collaborative SWOT exercise, participants identified several weaknesses within the current beef research strategy. A major theme centered on limited communication and collaboration. Communication with producers, in particular, was viewed as insufficient. Producers often lack opportunities to help prioritize research projects, and they want clearer explanations of how proposed or ongoing research applies directly to their operations and farms. Their demanding schedules also make it challenging to receive, process, and act on new information.

Another key weakness highlighted was the lack of education and outreach to both the public and decision-makers. This gap contributes to misunderstandings about the beef industry and the intent and value of ongoing research efforts. There is also a significant disconnect between the sector, producers,

and related industries. Discussions within the groups suggested that this gap may stem from insufficient outreach and engagement efforts, which in term has also led to limited political leverage.

Another topic of discussion was funding. Participants expressed concerns about the limited financial support available for many research initiatives, noting that the beef sector must compete not only with other industries but also with its own internal sectors—such as cow–calf and feedlot—for the same funding sources.

Labour competition was identified as another significant challenge. More attractive employment opportunities in other industries have increased competition for skilled workers, resulting in staffing difficulties across the sector.

Additional weaknesses highlighted included limited resources such as research capacity, land ownership and availability constraints, and restricted access to veterinary services. Participants also noted that, for many producers, beef production is considered a secondary source of income. This has raised questions about the profitability and long-term viability of certain projects within the industry. Also, a segmented beef supply chain can be a weakness because the different segments often operate in isolation, leading to inconsistent standards, limited coordination, uneven access to technology and infrastructure, and missed opportunities to share data or streamline processes across the industry.

Other areas of weakness identified include the industry's slow pace of change. More specifically, the industry faces challenges such as inconsistent grading standards and gaps in infrastructure, including biosecurity and traceability. These gaps also relate to limited processing capacity, outdated facilities, and a lack of available processing options overall. Additional weaknesses include difficulty adopting new technologies, incomplete record keeping across all areas, and significant climate differences between the east and west that can limit certain types of research. Also, producer mental health was discussed and the importance of acknowledging and addressing this. Lastly, the average age of the industry can be seen as a weakness as it leads to lack of accessibility for younger generations.

Sticky Notes:
- Communication back to producers (prioritization, applicability, capacity to receive info)
- Diversity of marketing, geography and operational needs
- Funding
- Current policies
- Staff/resources (researcher capacity, ownership, vet access)
- On farm facilities
- Competing with other industries
- Too large or small of scope for the province
- Outreach (lack of)
- Targeted knowledge transfer
- Slow to change
- Education to public and decision makers
- Processing capacity (lack of options, infrastructure is old)
- Lack of consistency in grading
- Profitability/uncertainty
- Infrastructure (biosecurity, traceability)
- Incomplete record keeping
- Limited political leverage
- Length of interval
- Technology adoption
- Profitability
- Beef industry being secondary income for producers
- Climate in east/north
- Consumer understanding

- Average age of industry (accessibility for youth)
- Collaboration between sector, producers and industry
- Increase in competitiveness in more attractive fields
- Producer mental health
- Segmented supply chain
- Land availability
- Labour competition with other industries

Summary: Weaknesses

Communication, collaboration, and producer engagement
- Limited communication back to producers (prioritization, applicability, and capacity to receive info)
- Producers have limited opportunities to help prioritize research and want clearer "how this applies on-farm" explanations
- Lack of targeted knowledge transfer and outreach reduces uptake of information and research outcomes
- Collaboration gaps between sector, producers, and industry; segmented supply chain leads to silos, missed coordination, and limited data sharing

Public awareness, outreach, and political influence
- Limited education to the public and decision makers contributes to weak consumer understanding and misunderstandings about the industry and research intent/value
- Outreach (lack of) contributes to limited political leverage
- Current policies can be a constraint and may not align with sector needs

Funding, profitability, and uncertainty
- Funding is limited; beef research competes with other industries and also internally (cow–calf vs feedlot priorities)
- Profitability/uncertainty remains a concern for projects and long-term viability
- Beef industry being secondary income for many producers raises challenges for engagement, investment, and project feasibility
- Some initiatives are seen as too large or too small of scope for the province (fit and scalability challenges)

Labour, staffing, and service access
- Labour competition with other industries and increase in competitiveness in more attractive fields creates staffing shortages
- Staff/resources constraints: limited researcher capacity, land ownership constraints, and restricted access to veterinary services

Infrastructure, processing, and supply chain limitations
- Processing capacity limitations (lack of options, infrastructure is old) and outdated facilities restrict sector growth and responsiveness
- Infrastructure gaps in biosecurity and traceability
- On-farm facilities constraints limit adoption of best practices and some research/management improvements
- Segmented supply chain contributes to inconsistent standards, uneven access to technology/infrastructure, and inefficiencies

Standardization, records, and technology adoption
- Lack of consistency in grading creates uncertainty and inefficiencies across the value chain
- Incomplete record keeping limits benchmarking, traceability, and evidence-based decision-making
- Technology adoption is difficult/slow, reducing productivity gains and slowing modernization
- Slow to change culture/practices across the industry
- Length of interval (long timelines) between research, rollout, and measurable outcomes can reduce momentum

Regional diversity and research fit

- Diversity of marketing, geography, and operational needs makes "one-size-fits-all" research and KTT less effective
- Climate differences (e.g. east and north) can limit certain types of research or restrict applicability province-wide

People and demographics
- Producer mental health is a concern and needs acknowledgement and support
- Average age of industry is a weakness, affecting accessibility for youth and succession in the sector

Opportunities

Raw Notes

Opportunities (Barbs Notes)

I went back through the days notes, but I am not sure I have a lot to add here. Here are a few additional points that came to mind:
- It was often difficult to take an opportunity and frame it as a question, let alone consider how it might lead to potential research.
- Feed efficiency continued to come up, but I think the key question here was how do changes in feed efficiency impact a farmer's bottom line.
- Carbon sequestration came up with the question of how do we quantify cattle's impact on carbon sequestration or emissions – I think BCRC has some data on this and it didn't seem to be much of a priority
- Strong markets is an opportunity but the low cow herd has led to larger carcasses – what is the ideal carcass weight (in terms of farmers and ROI as well as for the final consumer and the processor – they may all have different ideas of this).
- Food security came up as being in the recent federal budget, but this might be more of an opportunity of where the feds are interested in investing research dollars, than a focus for our own strategy
- Tech and AI was a big one – how can we capitalize more on this in the beef industry. I think this is also a big opportunity for us to leverage other funding (thinking even of the MITACS discussion)
- Looking to rebuild or grow the cattle herd, now is the time to think about opportunities for genetic improvement!
- Motivation and willingness of consumers to pay – this can relate to so many different factors, like VBP, but also carcass quality, cuts, buying local. In Ontario we have a close proximity to a large, diverse consumer base.
- Someone suggestion a lit review on cost of production data, identifying benchmark data for Ontario
- Our access to a federal inspected processing facility and the Centre for Meat Innovation & Technology (CMIT) creates opportunities.
- Use of marginal lands, community pasture development, lack of data on sylvopasture, and ecosystems (stronger incorporation of crop and livestock systems, use of livestock on solar farms – impact on the infrastructure, cost benefit analysis)

Sticky Notes:

- Feed efficiency (improvement impact bottom line)
- Carbon markets
    - How to quantify sequestration
    - How to quantify emissions

- Strong markets
    - Herd size vs production of beef (ideal carcass weight)
    - Consumer vs processor, who are we targeting?
- Improved communication, collaboration and KTT of BMP
    - How does BFO want to receive research info?
    - How to tie profitability back to basic research
- Investment in Food security
- Technology (AI, better animal surveillance and detection, younger gens acceptance of new practices)
- Early disease detection
- Rebuilding cow herd
- Opportunity for genetic improvement
- Consumer trends for beef
- KTT (cuts of beef, meal prep)
- Motivation/willingness to pay, attributes, Canadian/local/organic
- Cost of production literature review
- Maximize production vs optimize production
- Benchmark protruction numbers
- Education (producers and consumer)
- Collaboration
- Research facilities, meat lab, CMIT (colleges, internships, capstone projects, private industry)
- Use tech to attract new research interests , improve management, ease of management
- Quality
- Community pastures
- Traceability – accountability
- Integration between dairy and beef industry (what are the benefits? Genetics, supply, equipment)
- Proximity to consumer
    - To conduct consumer research
    - Ethnic diversity, new products, new utilizations/collaboration
- Farming ecosystem
    - Balance nutrient between crop and livestock systems
    - Soil health water equality
- Profitability of using marginal land for beef
- Silvo-pasture
- Solar farms

- UofG taking a different alliance approach and asking for increase in funding – Opportunity to include BFO research needs

Summary: Opportunities

1) Profitability, efficiency, and benchmarking
- Feed efficiency: opportunity to quantify how improvements impact a farmer's bottom line and ROI
- Maximize production vs optimize production (identify what "optimal" looks like for Ontario systems)
- Cost of production literature review to identify benchmark data for Ontario
- Benchmark production numbers to support decision-making and on-farm management

2) Markets, carcass targets, and quality
- Strong markets: opportunity to align herd size vs beef production outcomes (including ideal carcass weight)
- Define "ideal carcass weight" across viewpoints (producer ROI vs processor specs vs consumer preferences—who are we targeting?)
- Quality-focused opportunities (carcass quality, cuts, attributes) tied to consumer trends for beef

3) Consumer demand, willingness to pay, and proximity to market
- Motivation/willingness to pay: opportunity to understand what drives payment for attributes (Canadian/local/organic, VBP, quality, specific cuts)
- Proximity to a large, diverse consumer base: opportunity to conduct consumer research (including ethnic diversity, new products, new utilizations/collaboration)
- KTT opportunities aimed at consumers (cuts of beef, meal prep) to support demand and confidence

4) Technology, AI, and precision management
- Technology/AI: opportunities to capitalize on better animal surveillance and detection and improve ease of management
- Early disease detection: build/expand tools and approaches that improve outcomes and reduce losses
- Use tech to attract new research interests and leverage other funding
- Younger generations' acceptance of new practices creates momentum for adoption

5) Carbon, environmental markets, and verification
- Carbon markets: opportunity to quantify sequestration and quantify emissions in beef systems
- Carbon sequestration: opportunity to better measure cattle's impact on sequestration and/or emissions (including leveraging existing work/data where available)

6) Herd rebuilding, genetics, and productivity
- Rebuilding cow herd: opportunity to plan for growth while improving system performance
- Genetic improvement: opportunity to focus on genetic tools and selection as herd rebuilds
- Integration between dairy and beef industry: opportunity to assess benefits (genetics, supply, equipment) and improve coordination

7) Land use and integrated systems
- Use of marginal lands: opportunity to evaluate profitability of using marginal land for beef
- Community pastures: opportunity for development and coordinated grazing systems
- Silvopasture: opportunity to address lack of data and assess ecosystem and productivity outcomes
- Farming ecosystem: opportunities to balance nutrients between crop and livestock systems and link to soil health and water quality
- Solar farms: opportunity to evaluate livestock integration, impacts on infrastructure, and cost–benefit outcomes

8) Research facilities and partnerships
- Research facilities and meat lab: opportunity to maximize use of assets for applied research and training
- Access to a federal inspected processing facility and CMIT: opportunities for research, product development, and commercialization support
- Partnerships: opportunity to engage colleges, internships, capstone projects, and private industry collaboration
- UofG taking a different alliance approach and asking for increase in funding – Opportunity to include BFO research needs

9) Traceability

- Traceability: opportunity to strengthen accountability and support market access and system improvements

10) Communication and KTT

- Improved communication, collaboration and KTT of BMPs: opportunity to increase adoption and impact
- Clarify how BFO wants to receive research info and tailor KTT formats accordingly
- Tie profitability back to basic research to improve buy-in and application
- Education opportunities for both producers and consumers to strengthen understanding and adoption

Threats

Raw Notes

- Environmental Sustainability
  - Green House Gas Emission of Cattle and cattle production
  - Water Use from Cattle Production and Cattle Processing
  - Waste
    - Processing waste which included parts of the animal that aren't being utilized
    - On-Farm Waste ie plastics, needles, bale wrap and twine etc
    - Manure/Manure Management
  - **Discussion Focus**
    - The first priority is measuring impacts (GHG, water use, waste) using credible metrics.
    - Then identifying and implementing solutions to reduce environmental impact and improve sustainability.
- Other Protein Sources
  - Carbon Footprint Comparison
  - Nutritional Value Differences
  - Economic Benefits the difference they provide to the Ontario and Canadian Economy
  - **Discussion Focus**
    - Comparative analysis of alternative protein sources versus beef, including environmental, nutritional, and economic trade-offs.
- Public Opinion
  - Animal Welfare
  - Antibiotic Use (AMU/AMR)
  - Cloned Meat and progeny impact on animal health and human health
  - Distrust of Science
  - Land Use of Livestock
  - Implants (added Hormones) and Feed ingredients that promote growth
  - Up-Cycling of By-Products
  - Compression to Other emission source through Life Cycle Analysis and will the way we are conducting them be accepted by the public
  - Anti-Livestock Movement
  - Discussion was mainly around these are things that the public has interest in and what research gaps are out there that could be fill so that we have the information to talk with consumers
  - **Discussion Focus**
    - Identifying research gaps that limit effective communication with consumers.

- - - Generating credible data to support transparent, evidence-based discussions with the public.
- Economics of the Beef Industry
  - Age of Farmers
    - Succession Planning
  - Stagnation of Product quality
  - Monopoly in the Processing Sector
  - Shrinking Labour Force
  - New Technology
  - Impact of Cattle Cycle on the sector
  - Discussion was around the economic impact both to producers and the sector to the economy. What could be the impact of new technology to producers
  - **Discussion Focus**
    - Identifying research gaps that limit effective communication with consumers.
    - Generating credible data to support transparent, evidence-based discussions with the public.
- Foreign Animal Diseases
  - Need for early detection of FAD
  - Prevention of FAD
  - Affects of Zoning the Country and can that slow the spread while still keeping export markets open
  - Economic Impact of a FAD
  - **Discussion Focus**
    - What methods a can we utilize to limit the impact of FAD and what research do we need to conduct to prove our protocols are safe
- Processing Capacity
  - How can we reduce waste at Processing Plants
  - Development of new products to sell to producers
  - New Technology to reduce labour cost and workforce
  - Impact of regulations on processors
  - **Discussion Focus**
    - Improving processing efficient through technology and innovation
- CFIA
  - Regulatory Burden from CFIA, (SRM, Feed Regs, Transport)
  - How do we get New Animal Health Products approved faster and what research could be done to speed that up
  - **Discussion Focus**
    - Evaluating whether existing regulations deliver meaningful benefits or just burden to producers
    - Identifying research pathways to accelerate approval of new animal health products.
- Lack of Labour
  - On-Farm
  - In Processing Plants
  - **Discussion Focus**
    - Adoption of technology to address labour shortage both within processing and on-farm. What jobs are we currently doing that could be replaced by technology
- Trade
  - International Trade Barriers and impact on Canada
  - Internal Trade barriers within Canada and efficiency of production
  - **Discussion Focus**

- What trade barriers are causing the largest impact on the sector
- Loss of Pastureland
  - Grazing Practices
  - Cover Crops
  - **Discussion Focus**
    - Development of best management practices (BMPs) to support producers amid declining pasture availability.
- Land Use
  - Impact of Urban Expansion
- Cybersecurity
  - With all the new technology coming onto the farms how do farms ensure their data is safe but also protect against hostile actions from hackers
- Weather
  - Climate Change and adapting BMPs to fit the new needs of producers
  - Drought
    - Increase research of forage varieties
    - What does a proper insurance program looks like and do we need research
  - Too Much Rain
  - Heat Stress
    - Impact on Reproductive Health of breeding stock
    - Impact of livestock within barns and what's the impact of fans, proper ventilation etc.
  - **Discussion Focus**
    - Three main areas for research questions impact of heat stress, adapting to climate change and becoming more drought resistant
- Vet Shortage
  - Feasibility study on the impact of vet shortages and how that impacts producers' finances and herd health
- Farm Finical Program Disadvantage
  - Business Risk Management Programs and how they stack up against other regions and other commodities
  - Forage Insurance programs and are they meeting the needs of producers if not what other methods could be researched
- Rural Infrastructure
  - Internet Access for New Technologies
  - Cell Access to connect farms
  - Roads
- Animal Health Products
  - Need for new ways to keep animal health without AMU/AMR
  - Resistance of current products and need to find new products
  - BMPs to manage resistance on fly and worm control products
  - **Discussion Focus**
    - how do we get new products/manage the current suite of products so we don't cause more resistance. Applies to all animal health products

- If BFO shifts focus to areas away from production – additional loss of researcher capacity

- Can't do everything

- Industry with so many sources of information that lack accuracy or have no scientific backing.

- o Research to create a sustainability scorecard of animal and plant protein sources– collaborative and difference research focus areas – ie: Greenhouse gas per unit of protein, water, land use, human digestibility etc
- Animal Rights agendas

Sticky Notes:

- Environment sustainability (GHG, Water, Waste, processing and on-farm)
  - o Carbon footprint
  - o Nutrition value
  - o Economic benefit
- Public perception
  - o Welfare (antibiotics, implants, pharma)
  - o Proactive land use
  - o Upcycle by-products
  - o Cloned meat
  - o Distrust of science
  - o Comparison of other emissions sources (life-cycle analysis)
- Economics of beef industry
  - o Age of farmers
  - o New tech
  - o Monopoly of processing sector
  - o Shrinking of labour force
- FAD
  - o Early detection of FAD
  - o Prevention/zoning of affected areas
  - o Economic impact of FAD
- Processing capacity
  - o Poreduce wast
  - o New products
  - o New tech to low labour costs
  - o Min regulations impact on processors
- CFIA
  - o Reg burden (SRM)
  - o Feed regulations
  - o Transport regulations
  - o New product registration
- Lack of labour
  - o On-farm
  - o Processing plants
- International trade
  - o Domestic markets
  - o Trade barriers
- Loss of pastureland
  - o Grazing practice
  - o Cover crops
- Land use – urban expansion
- Cybersecurity
- Cattle cycle – financial losses

- Weather
  - Drought (forage insurance, forage varieties
  - Too much rain
  - Climate changes
  - Heat stress (reproduction health, indoor animals)
- Vet shortage – feasibility study for lestain areas
- Farm program disadvantage – BPM, product insurance
- Anti-livestock movement
- Rural infrastructure
  - Internet access
  - Cell access
  - Roads
- Animal health product resistance (external and internal parasites)

Summary: Threats

Environmental sustainability pressures
- Environmental sustainability concerns around GHG, water use, and waste (processing and on-farm)
- Waste pressures include processing waste (unused parts), on-farm waste (plastics, needles, bale wrap, twine), and manure/manure management
- Ongoing scrutiny of carbon footprint and expectations for credible metrics and measurable improvements

Competition from other protein sources
- Other protein sources increasing pressure through carbon footprint comparisons, nutritional value comparisons, and claims around economic benefits
- Risk that beef loses ground if comparisons are not credible, consistent, or well communicated

Public perception and social licence
- Public perception risks related to animal welfare, antibiotic use (AMU/AMR), implants/hormones, pharma, feed ingredients, and cloned meat
- Distrust of science and contested life-cycle analysis comparisons can undermine confidence
- Anti-livestock movement and animal rights agendas continue to challenge sector acceptance
- Ongoing debate around land use of livestock, proactive land use, and upcycling by-products (risk if misunderstood or criticized)

Animal health and biosecurity shocks
- Foreign animal disease (FAD) threat: need for early detection, prevention, and effective zoning to limit spread while protecting export markets
- Significant economic impact of FAD events on producers, processors, and trade

Processing sector vulnerabilities
- Processing capacity threats: limited ability to adapt without new technology, labour-saving innovation, and waste reduction
- Risk from monopoly/market concentration in processing sector, creating bottlenecks and reduced resilience
- Regulations impacting processors may limit flexibility and increase costs

Regulatory and approval risks (CFIA and beyond)
- Regulatory burden risks: SRM, feed regulations, and transport regulations
- Slow approval/registration timelines for new animal health products can limit innovation and responsiveness

Labour shortages

- Lack of labour on-farm and in processing plants; shrinking labour force creates chronic capacity constraints
- Dependence on technology to offset shortages increases urgency and investment needs

Trade barriers and market access
- International trade barriers and internal trade barriers within Canada can reduce efficiency and increase costs
- Domestic market impacts and export disruptions (especially under FAD or policy shifts)

Land base constraints
- Loss of pastureland and declining availability; need for resilient grazing practices and use of cover crops
- Land use pressures from urban expansion

Weather and climate volatility
- Weather threats: climate change impacts, drought, too much rain, and heat stress
- Drought pressures include forage availability, need for forage variety research, and adequacy of forage insurance
- Heat stress risks to reproduction health and impacts on indoor animals (ventilation, fans, housing)

Veterinary capacity
- Vet shortage threatens herd health outcomes and producer finances, especially in less-served areas

Business risk management program disadvantages
- Farm program disadvantage concerns: how BRM programs compare across regions/commodities
- Product/forage insurance may not meet producer needs, creating exposure during forage and climate shocks

Rural infrastructure limitations
- Rural infrastructure gaps: internet access, cell access, and roads limit adoption of new technology and emergency response capacity

Cybersecurity
- Cybersecurity risks increase as more technology and data systems are adopted on farms; threat of hostile actions/hacking and data loss

Animal health product resistance
- Growing resistance risks for animal health products (external/internal parasites; fly and worm control)
- Need to manage resistance through BMPs and maintain effectiveness of the current suite of products

Research capacity and focus risk
- If BFO shifts focus away from production, risk of additional loss of researcher capacity
- "Can't do everything" risk: limited ability to respond to all threats at once
- High volume of inaccurate/non-scientific information sources increases confusion and reputational risk