

# SUMMARY

# Cattle Nutrition & Production Efficiency

## Introduction

Over the next five years, advances in cattle nutrition and production efficiency will play a key role in improving productivity, reducing costs and emissions and strengthening the long-term competitiveness of the beef sector. Research and knowledge mobilization in this area spans multiple interconnected priorities, including whole life cycle efficiency, mineral nutrition, feed processing and byproduct utilization. Within this area, efforts target feeding and management factors across all production systems, directly influencing overall productivity.

Improved production efficiency of cattle at all stages of the life cycle (i.e., pre-weaning, post-weaning, backgrounding, grassing and feedlot) is key to improving cost of production, reducing methane emissions and ensuring industry competitiveness. Current methods to evaluate efficiency in cattle are often expensive or only correlate to one portion of an animal's lifecycle. Better criteria are needed to help producers select animals that will perform in their environments and reach individual productivity goals.

See page 15 of the 2026 Canadian Beef Research and Knowledge Mobilization Strategy for more cattle nutrition and production efficiency information.

## Key Issues

- Utilizing byproducts
- Feed efficiency improvements through improved feed processing and reduced waste
- Selecting efficient cows
- Mineral interactions, uptake and delivery
- Managing beef-on-dairy calves
- Cost-benefit evaluations of recommended practices and research that is nearing commercialization or adoption



Find the full Five-Year Canadian Beef Research & Knowledge Mobilization Strategy at  
[www.BeefResearch.ca/strategy](http://www.BeefResearch.ca/strategy)

### Research Outcomes

#### **Outcome 1: Improved beef cattle productivity and profitability through feed processing, by-products, additives, supplements or other feeding strategies**

1. Develop and/or validate rapid tests to detect and quantify antinutritional factors (e.g., ergot, nitrates)
2. Characterize the nutritional value of by-products that are available in significant volumes (e.g., hemp, lentil, peas, camelina by-products)
3. Improve the digestibility of high-fiber and recalcitrant feedstuffs and by-products
4. Develop cost-effective measuring and feeding strategies to ensure uniform supplement intake on pasture
5. Investigate starch availability in feedlot diets and methods to formulate rations based on starch content

#### **Outcome 2: Improved production efficiency through animal selection, genetics and breeding**

1. Identify and develop practical metrics to evaluate and predict production efficiency in cows on pasture and assess subsequent impacts on calf feed efficiency in the feedlot

#### **Outcome 3: Improved reproductive efficiency through increased understanding of beef cattle mineral requirements, supplementation practices and bioavailability**

1. More precisely define micronutrient requirements and develop regionally appropriate supplementation recommendations for breeding cattle of different ages throughout the production cycle in extensive winter-feeding systems

2. Investigate novel mineral supplementation strategies that help cattle maintain optimal mineral status on pasture (e.g., timing, delivery method)
3. Investigate strategies to increase the intake, absorption and bioavailability of minerals, particularly in the presence of mineral antagonists
4. Develop strategies or technologies to simply and cost-effectively improve water quality in remote areas, with specific focus on sulphates and mineral load

#### **Outcome 4: Improved animal performance and production efficiency in feedlot cattle**

1. Optimize protocols for the use of growth-enhancing products in beef-on-dairy cattle
2. Investigate how early-life and pre-feedlot management practices influence the health, performance and profitability of beef-on-dairy calves once they enter the feedlot
3. Evaluate management and duration of growing, backgrounding and feedlot phases to maintain intakes and efficient performance in long-fed cattle



### Knowledge Mobilization Outcomes

#### **Outcome 1: Increased adoption of feed testing as a basis for making sound feeding decisions**

1. Promote tools that guide producers on how to properly collect feed samples
2. Share resources on how to interpret feed tests and incorporate results into strategic feeding decisions
3. Provide and promote resources on feed and forage antinutritional factors (e.g., ergot, mycotoxins) including risks, sources and when and how to test
4. Build materials highlighting real producer examples that demonstrate effective feed management practices
5. Demonstrate cost savings through feed testing to improve ration efficiency and avoid unnecessary supplementation

#### **Outcome 2: Increased adoption of mineral nutrition and supplementation beneficial management practices**

1. Develop and promote resources that help producers make informed decisions on when and what type of mineral product to feed
2. Highlight the advantages and disadvantages of different mineral supplementation strategies including practical implementation, monitoring intake and common misconceptions

3. Develop materials that describe mineral bioavailability and why it matters
4. Illustrate the economic value of proper mineral nutrition and the hidden costs of mild deficiencies, incorporating real producer examples
5. Provide guidelines on available methods for assessing an animal's mineral status
6. Offer resources to help producers recognize and prevent mineral-related nutritional issues when feeding by-products

#### **Outcome 3: Increased adoption of beneficial practices for monitoring stock water quality**

1. Provide clear examples of the economic benefits of water testing using current prices
2. Develop and share resources outlining practical steps to manage water issues during drought
3. Update and maintain water quality guidelines according to the latest research, including the Livestock Water Quality Field Guide
4. Create materials demonstrating that visual inspection alone cannot reliably assess water quality

### Knowledge Mobilization Outcomes, cont.

#### **Outcome 4: Increased adoption of incremental changes to management practices that impact calf performance and optimize profitability**

1. Create and share resources promoting implant adoption, highlighting economic benefits and addressing producer perspectives
2. Share resources and host events demonstrating proper implant procedures
3. Promote the economic benefits of low-stress weaning strategies to encourage adoption
4. Promote the importance of maternal body condition score and its effects on calf performance
5. Promote crossbreeding as a tool for commercial producers to increase production efficiency
6. Develop visual resources on metrics impacting calf performance
7. Develop resources on beneficial management practice guidelines for starting calves on feed in backgrounding and feedlot environments, including producer examples and experiences

8. Promote beneficial management practices for feed and water requirements of cattle in backgrounding and feedlot environments
9. Create and share resources on feed grains (e.g., corn, barley, wheat) nutrition, processing and feeding guidelines

#### **Outcome 5: Improved production outcomes through increased adoption of interconnected management practices that impact herd performance**

1. Create resources describing the selection for herd genetics that fit different production environments, including why this is important
2. Promote the importance of using body condition score as a tool to measure cow performance and reproductive fitness
3. Develop visual resources on metrics impacting cow reproductive performance and longevity
4. Promote resources outlining beneficial practices for breeding bull nutrition and management
5. Develop troubleshooting guides for unexpected reduced reproductive performance

