

SUMMARY

Environmental Sustainability

Introduction

Environmental sustainability will be a defining driver of resilience, competitiveness and public trust in the Canadian beef industry over the next five years. The beef industry's environmental sustainability research and knowledge mobilization portfolio continues to grow and expand. While this section focuses on environmental outcomes, other areas of this strategy—including forage and feed productivity, animal health, performance and growth efficiency, beef quality and food safety—also help reduce the environmental footprint of Canadian beef through improved soil and watershed health, carbon sequestration, resource use efficiency and reduced food loss and waste.

See [page 43](#) of the 2026 Canadian Beef Research and Knowledge Mobilization Strategy for more environmental sustainability information.

Key Issues

- Greenhouse gas emissions
- Manure management
- Native grassland conversion (slow/stop conversion)
- Carbon storage
- Biodiversity
- Water quality and use
- 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

Research Outcomes

Outcome 1: Improved on-farm profitability through practices that reduce greenhouse gas emissions, improve biodiversity, increase soil carbon or improve water infiltration on pastures and rangeland

1. Investigate cost-effective methods to reduce greenhouse gas emissions that also improve animal performance in pasture- or forage-based systems
2. Evaluate the roles of animal management, soil microbiome and plant-soil interactions in short-, medium- and long-term soil carbon storage and sequestration, plant yield and water holding capacity
3. Evaluate how grazing management affects biodiversity, water quality and soil health

Outcome 2: Improved air, water and soil outcomes associated with confined cattle feeding operations

1. Evaluate the cost-effectiveness of supplements, strategies and practices used to reduce greenhouse gas emissions in the feedlot using a systems approach
2. Develop manure handling and processing technologies and strategies that enable manure to be transported and spread more cost-effectively
3. Identify and develop strategies or technologies to cost-effectively reduce odour in feedlot production systems

Outcome 3: Improved air, water and soil outcomes associated with beef packing and processing

1. Develop cost-effective cleaning technologies and procedures that ensure food safety with less need for (hot) water, sanitizers and labour in large and small processing facilities

Outcome 4: Optimize the balance between livestock and forage productivity and biodiversity by developing environmentally friendly and cost-effective solutions for managing pests and wildlife

1. Develop solutions for managing pests and wildlife (e.g., grasshoppers, gophers, moles, badgers, burrowing mammals, wild ungulates, predators) that maintain the balance between livestock productivity and biodiversity

Knowledge Mobilization Outcomes

Outcome 1: Increased adoption of effective manure management

1. Develop and promote resources outlining the advantages and disadvantages of manure storage strategies, including producer examples
2. Promote beneficial manure composting practices and demonstrate their economic costs and benefits
3. Share regionally relevant resources on manure management regulations and guidelines
4. Create resources on sampling manure and using results to inform manure application decisions

Outcome 2: Increased adoption of management practices to support biodiversity and species-at-risk habitat preservation

1. Promote resources, such as the Habitat and Biodiversity Assessment Tool (HBAT), that enable producers to incorporate native species needs into their land-management decisions
2. Share resources that demonstrate the benefits of restricting cattle access to riparian areas, including improved water quality and water availability
3. Provide examples of producers implementing beneficial practices and the positive impacts on biodiversity