

CRSB Research Priorities & Recommendations

Updated July 2023

Background

The **Canadian Roundtable for Sustainable Beef** (CRSB) published the first National Beef Sustainability Assessment (NBSA) in October 2016 (based on 2014 data), followed by an interim report with updates on the metrics coming from outside sources in January 2020. The CRSB is benchmarking progress with the second NBSA set to be published in early 2024 (based on 2021 data) updated every 7 years to allow for substantial data updates and address research gaps.

Several research and data gaps have been identified; these gaps need to be filled in order to improve the next NBSA set to be published in 2030. The current research priorities have been updated to exclude areas that are being addressed and include new areas that have been raised.

Overarching

1. Sustainability Community

- a. Improve data sharing and data access across the industry through communication and collaboration.
- b. Develop a systematic data collection process for parameters with significant contribution to the assessment (feed ration, soil carbon stock)
- c. Increase the response rate to surveys in regard to the social assessment by showcasing the importance of the NBSA across the industry.

Environment

2. Greenhouse Gases and Carbon

- a. Develop cost-effective methods of reducing GHG emissions or emissions intensity in primary production.
 - i. Feed - Improve feed and forage yields, quality, digestibility, efficiency and optimize both feed quantities and nutrients within rations to match animal requirements.
 - ii. Innovations in products and/or management that could increase productivity, efficiency and/or reduce, reuse, or recycle waste along the supply chain.
 - iii. Animal productivity - Improve animal health and genetics that extend the reproductive life of animals, improve reproduction rates, increase productivity, reduce mortality rates, reduce methane production, reduce the age of first reproduction, and reduce the prevalence of common diseases.
- b. Quantify the impact of land management on carbon storage potential; developing and/or incorporating regionalized values for soil cover, type and climate parameters.
 - i. Develop ways to validate annual carbon sequestration using satellite data.
 - ii. Develop carbon protocols that are effective for producers with minimal measuring and reporting burden.
 - iii. Develop methods to assess carbon stock deeper than 30 cm into the soil.

- iv. Develop region-specific data and specific carbon stock change per cover type.
 - c. Quantify the potential of changes in manure storage and handling (e.g. biodigesters, acidification of manure) to reduce emissions intensity.
 - d. Further identify the contribution of dairy-beef crossbred animals and meat from the dairy sector to the environmental parameters associated with beef.
- 3. Food Waste and Loss**
 - a. Canadian specific information regarding food waste, at and beyond the packer's gate at processing, retail/foodservice and the consumer.
- 4. Land Use and Biodiversity**
 - a. Quantify the economic, agronomic and biodiversity benefits of integrated annual crop, forage and beef production systems.
 - b. Improve land use data quality - clarifying national land use conversion numbers and identifying land that is at high risk of conversion.
 - c. Further identify and quantify beneficial management practices including rotational grazing, understanding of stocking capacity and grazing days per acre, and soil health through technical assessments.
 - d. Update and refine the Wildlife Habitat Capacity Index (WHCI) developed by Agriculture and Agri-Food Canada (AAFC) with current data. Such refinements could include:
 - i. Improve granularity of the analysis, by assessing wildlife breeding and foraging/feeding habitat requirements and impacts of species when increasing/decreasing in population separately, on different cover types and by considering taxonomic groups or endangered species separately.
 - ii. Better understand how grazing systems and management practices can affect biodiversity using multi-taxon criteria.
 - e. More variety in biodiversity assessments (i.e. calf-fed vs yearling-fed scenarios, high vs low labour requirements, high vs low costs)
- 5. Water**
 - a. Water Use
 - i. Encourage implementation of efficient measures for irrigation in the Prairies including efficient equipment and systems.
 - ii. Encourage full Life Cycle Inventories to be completed for feed grains used in beef production, including water footprint analysis. Current data from the Canadian Roundtable for Sustainable Crops only provides GHG emission data.
 - b. Water Risk
 - i. Develop a regionalized method capable of understanding on-farm practices and cattle specific factors related to water risk.
 - ii. Quantify the water security risk to forage, grasslands and feed production for beef production across Canada posed by projected climate change.
 - c. Water Quality
 - i. Quantify the value of grasslands and agricultural management practices that provide benefits (such as groundwater recharge, water filtration of runoff, faster recovery from flood or drought).
 - ii. Develop a National Riparian Health Indicator potentially using satellite data.

- iii. Quantify the impact of native and tame pasture management on water use, cycles and watersheds in eastern Canada.
- iv. Quantify phosphorus (P) excretion rates of grazing animals, and nitrogen impacts on GHG emissions and P runoff and leaching impacts on water quality/eutrophication compared to adjacent cropland and assess whether forage or pasture strips act as a buffer to mitigate nutrient entry into waterways. Regional gap in eastern Canada.
 - 1. Update AAFC estimates for erosion on pastureland.

Social

6. Labour Management

- a. Assess factors driving **workload**, implications of high workload and identification of economically viable management practices that could reduce workload.

7. People's Health and Safety

- a. Support the monitoring of **farm health and safety**; including accident rates and communicate on ways to prevent fatalities.
- b. Support research and extension efforts into **mental health and wellbeing** of producers, farm employees, and veterinarians.

8. Animal Care

- a. Support research and technology transfer of pain mitigation practices addressing painful procedures.
- b. Incorporate the anticipated new **Beef Code of Practice** to obtain accurate metrics of animal welfare and production practices used on-farm.

9. Antimicrobial Use

- a. Advance monitoring of antibiotic use and responsible management

Economic

10. Producer Viability

- a. Assess the economic feasibility and acceptance of various recommended management practices (RMPs) for different production systems across Canada.
 - i. Evaluate various winter-feeding strategies as feed is a major cost.
 - ii. Identify practices for different production systems that result in win-win situations that are both lower cost of production and have lower economic impact.
- b. Quantify the value of natural capital from beef production.
 - i. Evaluate ways that natural capital can be monetized for producers to discourage land use conversion.
- c. Support technology transfer that increases the uptake of sustainable production practices that are aligned with the *Certified Sustainable Beef Framework* indicators.
 - i. Support research to better understand producer decision making around barriers and adoption of sustainability practices.
 - ii. Support ongoing and existing technology transfer efforts by industry.

11. Consumer Demand

- a. Quantify the proportion of existing Canadian production sold using niche market attributes, the potential size of these markets, costs and premiums associated with them.

Conclusion

The above research recommendations will ensure future iterations of the National Beef Sustainability Assessment are more robust and informative to drive continuous improvement. Questions arising out of the above recommendations can be directed to Kara Barnes (projects@crsb.ca).

Our Mission: *To advance, measure and communicate continuous improvement in sustainability of the Canadian beef value chain.*

Our Vision: *That the Canadian beef value chain is a global leader in environmental, social and economic sustainability and part of a trusted and thriving food system.*