



Sustainable Beef Production Standard

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Canadian Roundtable for Sustainable Beef

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GLOSSARY OF TERMS

Animal stress: “Stress is a broad term which implies a threat to which the body needs to adjust...Stress is defined as a condition in an animal that results from the action of one or more stressors that may be of either external or internal origin. Coping will vary by animal and each situation/stressor” (van Borell, 2000, pp. 144).

Entry threshold: an unacceptable practice or outcome that requires improvement to become certified.

Beef producers: cow-calf, backgrounding, feedlot and dairy beef operations are in scope for a certification audit to the Standard.

Carbon sequestration: the process of carbon capture and long-term storage of atmospheric carbon dioxide, either on land (e.g. through the enhancement of natural sinks such as grasslands) or in the ocean (IPCC, 2005).

Continuous learning: “is regularly and purposefully acquiring ever deeper and broader knowledge and skills and applying them to new behavio[u]rs” (Sessa and London, 2015, Preface). It can be undertaken at the individual, group/team and/or organizational level, and can be acquired in different ways, including mentorship, informal or formal training, and communication (Sessa and London, 2015).

Crop input products: include fertilizers, pesticides and fungicides.

Distressed animal: animals needing euthanasia; examples include: a downer or chronically diseased or severely injured animal with no hope of recovery (Adapted from CFACAP, 2015).

Egregious Acts of Neglect: Egregious acts of neglect include but are not limited to: 1) failing to euthanize a distressed animal in a timely manner unless under active veterinary treatment; 2) failing to assist and provide medical care to a sick and/or non-ambulatory animal in a timely manner; and 3) failing to provide adequate water and feed to animals as per the guidelines in the Beef Code of Practice (Adapted from CFACAP, 2015).

Equity: fair and impartial compared to others.

Feasible: what a beef producer identifies to be reasonable and practical.

Indicator: a measureable variable.

Measure: a direct or proxy metric of the desired outcome of an indicator.

Native ecosystem: terrestrial ecosystems including grasslands, woodlands and shrublands, primarily consisting of native plants; aquatic ecosystems that are comprised of naturally flowing and still water bodies, as well as naturally occurring wetlands and forests (i.e. tree-covered areas) (Adapted from SAN, 2017).

Near miss: also sometimes referred to as a ‘close call’, is a warning sign that something is very wrong and requires attention. A close call is a warning of an incident in the making and a sign that operators need to look for the causes to prevent future injuries (CASA, 2015).

Outcome-based: a desired output or end state.

Overgrazing: is not a single point in time condition, given that grass conditions are affected by multiple external factors. Overgrazing is when the land is grazed in a way that does not leave enough carryover, allow sufficient rest and recovery to the plant communities and if repeated, it reduces the long-term capabilities of the site in the future, meaning its carrying capacity is reduced. Symptoms can include a lack of litter (carryover), erosion and bare soil (beyond natural levels that a healthy site in that area would have), reduced primary production (growth), increased variability (production changing with weather/moisture changes) and change of plant community to more grazing resistant plant species (usually shorter and less palatable species) (Adapted from Global Rangelands, 2017).

Quality beef: In the context of the CRSB Sustainable Beef Production Standard, quality beef should not be interpreted solely in reference to Canadian beef quality grades, as many production practices contribute to a broader definition of quality. For these purposes, quality beef should be measured and verified by production practices that may include management of cattle health, growth, handling and processing, feeding practices, genetics, and providing an environment to minimize stress, carcass defects, and disease. These measurements help support a consistent customer experience with a high level of tenderness, juiciness and flavour.

Responsibly managed: managed in a way that seeks to balance social, economic and environmental components of the resource and system.

Responsible production: when a conscious effort is made to consider the social, economic and environmental aspects of production decisions.

Riparian areas: lands adjacent to streams, rivers, lakes and wetlands, where the vegetation and soils are strongly influenced by the presence of water. The exact boundary of the riparian area is often difficult to determine because it is a zone of transition between the water body and the upland vegetation. A riparian management zone usually extends from the water's edge to the upland area. They link ecosystems within the landscape circulate nutrients, help maintain water quality, and moderate erosion and high river flow events (AAFC, 2014; Cows and Fish, N.D.).

Safe: steps are taken to reduce the risk of injury.

Soil health: the soil's fitness to support plant growth without becoming degraded or otherwise harming the environment (Acton and Gregorich, 1995).

Sustainable beef: a socially responsible, economically viable and environmentally sound product that prioritizes planet, people, animals and progress.

Veterinarian-Client-Patient-Relationship:

A relationship that exists according to the following:

1. The veterinarian has assumed the responsibility for making clinical judgments regarding the health of the animal(s) and the need for medical treatment, and the client has agreed to follow the veterinarian’s instructions.
2. The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s) or by medically appropriate and timely visits to the premises where the animal(s) are kept.
3. The veterinarian is readily available for follow-up evaluation, or has arranged for emergency coverage, in the event of adverse reactions or failure of the treatment regimen (Canadian Veterinary Medical Association, 2016).

Watershed health: a watershed is an area of land where all surface water (rain and snow) drains into the same place. Watershed health means that ecological systems are functioning well (NCC, 2016).

Wetlands: land where the majority of soils are “waterlogged for the majority of the year” and/or “land is periodically or permanently inundated by shallow water” (SAN, 2017, pp. 22).

Wildlife: undomesticated animals present in the ecosystem.

Wilful Acts of Abuse: mistreatment or intentional harm of cattle is unacceptable. This includes but is not limited to: beating an animal; slamming gates on animals unless for human safety; dragging or pushing cattle with machinery unless for animal or human safety; or allowing herd dogs to continue pushing cattle with nowhere to move (Adapted from Beef Cattle Code Development Committee, 2013).

4R Nutrient Stewardship – Right Source: ensure a balanced supply of essential nutrients, considering both naturally available sources and the characteristics of specific products, in plant available forms; **Right rate:** assess and make decisions based on soil nutrient supply and plant demand; **Right time:** assess and make decisions based on the dynamics of crop uptake, soil supply, nutrient loss risks, and field operation logistics; **Right place:** address root-soil dynamics and nutrient movement, and manage spatial variability within the field to meet site-specific crop needs and limit potential losses from the field (Fertilizer Canada, 2017).

ACRONYMS AND ABBREVIATIONS

BCS – Body Condition Score

BRD – Bovine Respiratory Disease

CRSB – Canadian Roundtable for Sustainable Beef

GRSB – Global Roundtable for Sustainable Beef

NBSA – National Beef Sustainability Assessment

INTRODUCTION

Background

The Canadian Roundtable for Sustainable Beef (CRSB) is a multi-stakeholder organization focused on advancing sustainability efforts within the Canadian beef industry. The CRSB is a member of the Global Roundtable for Sustainable Beef (GRSB), a similar multi-stakeholder initiative focused on the sustainability of the global beef value chain. The CRSB's work aligns the GRSB's high-level efforts with relevancy to the Canadian context.

Vision: the Canadian beef industry is recognized globally to be economically viable, environmentally sound and socially responsible.

Mission: to facilitate the framework for the Canadian Beef industry to be a global leader in the continuous improvement and sustainability of the beef value chain through science, multi-stakeholder engagement, communication and collaboration.

Objective of the CRSB Sustainable Beef Production Standard

The purpose of this document is to identify the outcome-based indicators, goals and requirements for the assessment and audit of beef producers in the context of sustainability. It is also used by CRSB-approved Certification Bodies and auditors when carrying out certification audits, and by interested stakeholders to better understand the contents of the Standard. The CRSB will develop interpretation guidance and implementation support materials as required.

Underpinning the indicators is the triple-bottom-line approach that balances environmental, social, and economic considerations, and the expectation that participants in the sustainable beef value chain respect all laws that govern their activities. The indicators are built on the assumption that participants are complying with all applicable laws and regulations; they are not intended to verify legal compliance or to endorse any activity as meeting any legal requirement that may apply to an individual operation. Participants are responsible for ensuring they are compliant with all applicable laws and regulations; if a participant is found by the applicable regulator to be in contravention of any laws or regulations, the participant's status in the program will be reviewed and may result in suspension or removal from the program. Prior to an audit, a self-declaration on compliance with applicable laws or regulations will be required from the beef producer.

Scope

The Sustainable Beef Production Standard is aimed at all cow-calf, backgrounding, feedlot and dairy beef operations in Canada; these are the operations currently in scope for voluntary certification to the Standard.

The CRSB's Indicator Committee (see Acknowledgments) developed the Standard through a multi-stakeholder, collaborative approach, which included two rounds of public consultation, that align with the five GRSB principles (Figure 1):

1. Natural Resources: the beef value chain manages natural resources responsibly and enhances ecosystem health;
2. People and the Community: sustainable beef stakeholders protect and respect human rights, and recognize the critical roles that all participants within the beef value chain play in their community regarding culture, heritage, employment, land rights and health;
3. Animal Health and Welfare: sustainable beef producers and processors respect and manage animals to ensure their health and welfare;
4. Food: sustainable beef stakeholders ensure the safety and quality of beef products and utilize information-sharing systems that promote beef sustainability; and
5. Efficiency and Innovation: sustainable beef stakeholders encourage innovation, optimise production, reduce waste and add to economic viability.



Figure 1: The Five Principles of Beef Sustainability

The Standard is written to be outcome-based; measureable; based on science and expert opinion; and address key concerns around the sustainability of beef production in Canada. It is important to note that auction marts and land for feed production are currently out of scope; however, will be revisited in future reviews of the Standard. The Canadian Roundtable for Sustainable Crops is setting parameters around sustainable feed, and the CRSB is working very closely with them to facilitate alignment.

Economic sustainability was challenging to incorporate into the Standard due to privacy and confidentiality concerns. This is more comprehensively addressed at the national level in the CRSB's National Beef Sustainability Assessment (NBSA), which was released in October 2016. The NBSA is a robust scientific study that set benchmarks in various social, economic and environmental areas. The assessment included an indicator on profitability and showed that, as

an example, long term average margins from a 200 head cow herd¹ of \$9,650² with paid labour of \$7,909 provides a total annual income of \$17,559 (nominal, excludes government program payments). This is below Statistics Canada's low-income cut-off for rural areas in 2013 of \$24,456 after taxes (family of four, Table 206-0092). Therefore, long-term margins on the typical cow-calf operation (i.e., those with less than 200 beef cows) cannot support a family and therefore are often reliant on other sources of income. In addition to profitability, a large number of other indicators were benchmarked in the NBSA. Following the completion of the NBSA, the CRSB developed a Sustainability Strategy that consists of goals, key performance indicators and action items to support continuous improvement (available on the CRSB website). The assessment and strategy will be used to measure the industry's sustainability progress over time at the national level as well as help guide the efforts of the CRSB and its membership.

The CRSB Certified Sustainable Beef Framework

- 1. CRSB Sustainable Beef Production Standard:** contains the indicators, goal(s) and requirements for the assessment, audit and certification of beef producers in the context of sustainability.
- 2. CRSB Sustainable Beef Processing Standard:** contains the indicators, goal(s) and the requirements for the assessment, audit and certification of beef processing facilities in the context of sustainability.
- 3. CRSB Chain of Custody Requirements:** contains the technical and administrative requirements for tracking beef and claims about beef sourced from CRSB certified operations.
- 4. CRSB Assurance Protocols:** provides a detailed overview of the certification process.
- 5. CRSB Requirements for Certification Bodies:** contains guidance for Certification Bodies that are seeking approval to conduct certification services on behalf of the CRSB.

Certification Requirements for Beef Producers

All the requirements in the Achievement level are highlighted in yellow in this document and must be met in order to achieve certification to the Standard. Innovation and Excellence levels are also included in the Standard to support continuous improvement in the Canadian beef industry (i.e. achievement of these levels is not required for certification). All the requirements in the Innovation level (in addition to all those requirements in the Achievement level) must be met in order to achieve Innovation. Similarly, all the requirements in the Excellence level (in addition

¹ 48% of cows are in herds with less than 122 head (Statistics Canada, 2011, Census of Agriculture)

² This assumes all profits go to the family and are not re-invested in the operation.

to all those requirements in Achievement and Innovation) must be met in order to achieve Excellence.

An Entry Threshold is included for some of the indicators in the Standard; these reflect unacceptable practices or outcomes that require improvement to achieve certification.

Some requirements in the Standard apply to specific segments of beef producers (e.g. feedlots) or types of operations (e.g. those who use crop input products). There are also some inclusions in the Standard that are for information collection purposes only and do not influence audit results. When a requirement in the Standard is applicable to just one segment, type of operation or is not assessed in the audit, this is indicated in a footnote.

The audit will be conducted based on the frequency defined in the Assurance Protocol and must be performed by a CRSB-approved Certification Body.

CRSB SUSTAINABLE BEEF PRODUCTION STANDARD

The CRSB Standard is detailed below. Each of the five principles of sustainable beef (i.e. natural resources, people and the community, animal health and welfare, food, and efficiency and innovation) contains indicators, goal(s) and requirements for certification. The indicators are identified in **blue** font; the goal(s) are identified in **green** font; and the requirements for certification are highlighted in **yellow** in the Achievement level.

Natural Resources

The intention with the Natural Resource requirements in the Standard is for these resources to be responsibly managed and ecosystem health to be maintained or enhanced. In developing the natural resource requirements in the Standard, there were four broad areas of consideration raised within the CRSB:

- Individual operation as the focal point for the indicators;
- A lack of existing measurement tools;
- Management of invasive species; and
- Complexities in natural resources management.

The requirements in the Standard were designed for individual operations and reflect what is within the control of operators, although it is recognized that an operation is intimately connected to, and a part of, other systems. For example, an operation has limited ability to improve river or stream water quality on their operation if the water quality upstream is poor; this example applies similarly for air quality. The operation will thus only be measured based on what is within its control.

Measurement of some of these complex processes on-farm is often not scientifically possible or economically feasible; for example, there is no practical tool available for producers to measure their impact on air quality or their carbon balance. While air quality within barns has

set parameters, there are numerous other aspects of the production system that can contribute to air quality that are not possible to measure. Therefore, the scope the air quality requirement is on odour and dust being managed for the benefit of people and animals at the feedlot.

Beef production contributes to the carbon balance; for example, it is both an emitter of greenhouse gases (e.g. cows emit methane) as well as a sink (e.g. the vast grasslands upon which production occurs sequester carbon). There is currently no practical tool available for individual producers to measure on-farm carbon balance. The indicator that addresses carbon emissions and sequestration was written in a way that supports awareness building around practices that contribute to carbon sequestration and minimize emissions (e.g. keeping grasslands healthy, continuing to invest in production and feed efficiencies).

Indicators such as air quality and carbon balance are more scientifically and economically feasible to estimate at a national level; the National Beef Sustainability Assessment examined these factors (visit the [CRSB website](#) for more information).

The CRSB identified managing against invasive species as very important for individual producers with multifaceted landscapes. There are instances, for example, of woody encroachment on native grasslands; the requirements are outcome-based to account for these types of situations.

Finally, the complexities of ecological services mean management for those services is also complex, particularly on natural grasslands. For example, wildlife enhancements need to be region and even site specific. It is much simpler to enhance tame grassland for common wildlife species that exist in association with human development than it is to enhance habitat for species at risk on native prairie.

NATURAL RESOURCES

Riparian areas, wetlands, surface and ground water sources and nutrient runoff are responsibly managed to help maintain or enhance watershed health.

Goal: *Watershed health shall be maintained or enhanced, and degradation of water quality shall be minimized.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>Riparian areas and wetlands shall be monitored and managed.</p> <p>Potential sources of contamination to water bodies shall be identified and mitigated.</p> <p>Valid Confined Feeding Operation permit in applicable jurisdictions (e.g. feedlots).</p>	<p>A grazing management plan that minimizes impacts to water quality is implemented when cattle are on pasture.</p> <p>A nutrient management plan that minimizes impacts to water quality is implemented when cattle are fed intensively.</p>	<p>A grazing management plan that minimizes impacts to water quality when cattle are on pasture is implemented, documented, reviewed and updated annually as needed.</p> <p>A nutrient management plan that minimizes impacts to water quality when cattle are fed intensively is implemented, documented, reviewed and updated annually as needed.</p>

NATURAL RESOURCES

Soil health is maintained or enhanced.			
Goal:	<i>Soils shall support plant growth without becoming degraded.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>Problem areas shall be identified, and soil erosion, compaction and degradation shall be monitored and managed.</p>	<p>A grazing management plan that includes soil health considerations is implemented when cattle are on pasture.</p> <p>A nutrient management plan that includes soil health considerations is implemented when cattle are fed intensively.</p>	<p>A grazing management plan that includes soil health considerations when cattle are on pasture is implemented, documented, reviewed and updated annually as needed.</p> <p>A nutrient management plan that includes soil health considerations when cattle are fed intensively is implemented, documented, reviewed and updated annually as needed and includes soil testing, with nutrient application rates based on testing results and crop needs.</p>

NATURAL RESOURCES

Practices that support carbon sequestration and minimize emissions are understood and/or employed.

Goal:	<i>To raise awareness about current and evolving production practices and methods of measurement that support carbon sequestration and minimize emissions in the Canadian beef industry.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Operation shall be aware of management practices that support carbon sequestration and minimize emissions.	Some practices that support carbon sequestration and/or minimize emissions are adopted when economically feasible.	Operation assesses the success of practices that are supporting carbon sequestration or minimizing emissions.

NATURAL RESOURCES

Air quality for people and animals is responsibly managed³.			
Goal:	<i>Odour and dust, where applicable, shall be managed for people and animals.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Indoor air quality and ventilation in barns shall be maintained. Operation shall be aware of odour and dust issues and shall implement practices to reduce when staff or neighbours raise complaints.	Odour and dust are monitored and management practices are implemented to minimize impact on air quality.	An odour and dust management plan is documented, implemented, and regularly updated.

³ This requirement is applicable to feedlots only.

NATURAL RESOURCES

Grasslands, tame pastures and native ecosystems are maintained or enhanced⁴.

Goal: *Grasslands, tame pastures and native ecosystems shall be monitored and managed, and a balanced approach to exotic and invasive plants shall be achieved.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
Overgrazing without a plan for improvement.	Grasslands, tame pastures and/or native ecosystems shall be monitored and managed (including for exotic and invasive plant species).	A grazing management plan is implemented.	Grazing management plan is documented and reviewed annually. Plan includes goals, objectives, resource inventory, soil health, monitoring, stocking rate, time/season, duration, and supplemental and residual feed.

⁴ This indicator applies to operations that utilize grazing lands.

NATURAL RESOURCES

Habitat for wildlife is maintained or enhanced, and wildlife conflict prevention is managed.

Goal: *Measures shall be taken to maintain habitat to benefit wildlife.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	The predators and wildlife that are present on the operation shall be known, monitored and management practices to help maintain wildlife and address predators shall be adopted.	An inventory of wildlife, including species at risk, predators or problem wildlife, is recorded.	Habitat improvements, or wildlife conflict negation efforts, have been implemented.

People and the Community

The overall intent with the People and the Community requirements in the Standard is to respect human rights and well-being, and create a healthy work environment that is also safe. The CRSB discussed the importance of looking beyond adherence to laws, at ways to incorporate the notion of fairness, career development opportunities, and community involvement into the Standard.

The CRSB stresses that all participants are expected to comply with all applicable laws and regulations, including, without limitation, workplace health and safety legislation, and human rights legislation. This was an overarching theme that spanned more than just this one principle and therefore, the CRSB decided that a broad statement in the introductory text about compliance with all applicable laws and regulations that covers all the principles was most appropriate. However, it also notes that it was an important topic of discussion within this principle in particular.

There was agreement that the work environment should be safe and healthy for workers (including family members), and that people should be treated with equity and respect in all instances, which addresses potential questions around fairness.

Requirements on career development and community involvement were also considered. There is an indicator under Efficiency and Innovation that addresses continuous learning and therefore career development is not duplicated here. An indicator on community involvement was included for collection purposes only (not assessed in the audit) to recognize the positive contributions producers make to their communities.

PEOPLE AND THE COMMUNITY

A healthy and safe work environment is provided.

Goal: *Steps shall be taken to reduce the risk of injury and illness.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>Workers shall have the knowledge and equipment to safely complete their assigned duties.</p> <p>Equipment shall be maintained for operator safety.</p>	<p>Safety training is provided to all workers in their respective areas of work.</p> <p>Workers are encouraged to report equipment malfunctions and near misses (see glossary).</p>	<p>Operation has a documented health and safety policy/program, which is implemented, reviewed and updated regularly.</p> <p>Policy/program includes: formal health and safety policy, risk assessment, control strategies, and training.</p>

PEOPLE AND THE COMMUNITY

All workers are treated with equity and respect.

Goal: *Workers shall be treated fairly and impartially.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	There shall be an absence of discrimination and workers shall be able to express concern about their treatment without repercussion.	Where appropriate, workers are included in planning and operational decisions.	Operation has a documented code of ethics/conduct that is followed.

PEOPLE AND THE COMMUNITY

Operation is involved in its community (community is defined by each individual).⁵

Goal: *To recognize beef producers for their contributions to their community. Community is defined by each individual.*

⁵ This indicator is binary (assessed as 'yes' or 'not applicable'). It is for information collection purposes only; it will not be scored in the audit.

Animal Health and Welfare

The central tenet of the Animal Health and Welfare principle is that animals are respected and managed to ensure their health and welfare. Main points of discussion in the CRSB include alignment with the National Farm Animal Care Council Codes of Practice.

The indicators were designed to align with the Code of Practice for the Care and Handling of Beef Cattle (Beef Cattle Code Development Committee, 2013), Code of Practice for the Care and Handling of Dairy Cattle (Dairy Code Development Committee, 2009) and the Code of Practice for the Care and Handling of Veal Calves (Canadian Agri-Food Research Council, 1998) - together, the “Codes”. The Codes provide a reference point for almost all indicators within this principle, as the Codes were developed through a multi-stakeholder process and contain required and recommended practices for animal care and handling in Canada. The Codes have been used in the Animal Health and Welfare portion of this Standard.

Animal pain was a significant discussion point. It is understood that, at times, painful procedures may be completed and that there are limitations to managing pain because of the limited number of appropriate pain medications available for livestock. The Code was recommended as the reference point for optimum practices to mitigate/minimize animal pain.

The CRSB developed one indicator to address animal stress instead of developing numerous indicators for differing situations that have potential for stress. It is worthwhile noting that transportation after cattle leave the farm-gate is beyond the control of the producer, if the producer is not transporting the animals. However, it is the responsibility of the producer that the animals be fit for transport prior to loading. As with all applicable laws and regulations, producers are expected to comply with laws, regulations and associated requirements.

ANIMAL HEALTH AND WELFARE

Nutritional needs of cattle are met.

Goal: *Cattle are in good health and are provided sufficient food for their physical well-being.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>The following requirements in the Beef Code of Practice are met.</p> <p>Beef Code of Practice, Section 2.1: Nutrition and Feed Management</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Ensure cattle have access to feed of adequate quality and quantity to fulfill their nutritional needs at all times, and maintain proper body condition, taking into account factors such as: age, frame size, reproductive status, health status, level of production, competition and weather. • Monitor cattle behavior, performance, body condition score and health on an ongoing basis and 	<p>One of the recommended practices is implemented, or equivalent that is appropriate to the operation (e.g. cattle are sorted and fed in different groups based on cattle condition and weather).</p> <p>Beef Code of Practice, Section 2.1: Nutrition and Feed Management</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • test nutrient content of feed ingredients used and balance rations as necessary. Consult a nutritionist for advice • become familiar with potential micronutrient deficiencies or excesses in your geographic area and use appropriately-formulated supplements • manage feedstuffs in a way to maintain quality and minimize 	<p>Two or more of the recommended practices are implemented, or equivalent that is appropriate to the operation (e.g. total mixed rations fed to cow herd when needed; rations changed according to cattle group; consulting a nutritionist).</p> <p>Beef Code of Practice, Section 2.1: Nutrition and Feed Management</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • test nutrient content of feed ingredients used and balance rations as necessary. Consult a nutritionist for advice • become familiar with potential micronutrient deficiencies or excesses in your geographic area and use appropriately-formulated supplements • manage feedstuffs in a way to maintain quality and minimize

Nutritional needs of cattle are met.

Goal: *Cattle are in good health and are provided sufficient food for their physical well-being.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>adjust the feeding program accordingly.</p> <ul style="list-style-type: none"> Take prompt corrective action to improve the body condition score of cattle with a score of 2 or less (out of 5). Take steps to prevent exposure of cattle to toxins (such as: lead batteries, fertilizer, treated seed, antifreeze, nitrates) and to avoid feed with adverse physical qualities that could cause injury or limit intake. <p>Beef Code of Practice, Section 3.4: Safety and Emergencies</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> Have a current emergency response plan to provide feed, water and care for cattle in case of emergencies. Review this 	<p>spoilage</p> <ul style="list-style-type: none"> avoid sudden or extreme ration changes provide a less competitive feeding environment for sick, injured, weak or convalescing cattle. 	<p>spoilage</p> <ul style="list-style-type: none"> avoid sudden or extreme ration changes provide a less competitive feeding environment for sick, injured, weak or convalescing cattle.

Nutritional needs of cattle are met.			
Goal:		<i>Cattle are in good health and are provided sufficient food for their physical well-being.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	plan with all responsible personnel so it can be implemented. Ensure emergency contact numbers are readily accessible and current.		

ANIMAL HEALTH AND WELFARE

Cattle have sufficient quantity and quality of water.

Goal:	<i>Water requirements of cattle shall be met to support their physical needs both in terms of quality and quantity.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>The following requirements in the Beef Code of Practice are met.</p> <p>Beef Code of Practice, Section 2.2: Water</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> Ensure that cattle have access to palatable water of adequate quality and quantity to fulfill their physiological needs. Monitor water sources, feeding habits, behavior, performance and health on an ongoing basis and be prepared to adjust the watering program accordingly. Snow may only be used as a sole winter water source providing it is of sufficient quantity and quality to meet 	<p>One of the recommended practices below is implemented.</p> <p>Beef Code of Practice, Section 2.2: Water</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> check automated water sources daily to ensure they are dispensing properly test water quality in the event of problems such as poor performance, reluctance to drink, or reduced feed consumption if utilizing natural water sources, provide water in troughs or bowls wherever possible to ensure cleanliness of water supply and safe 	<p>Two or more of the recommended practices below are implemented.</p> <p>Beef Code of Practice, Section 2.2: Water</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> check automated water sources daily to ensure they are dispensing properly test water quality in the event of problems such as poor performance, reluctance to drink, or reduced feed consumption if utilizing natural water sources, provide water in troughs or bowls wherever possible to ensure cleanliness of water supply and safe

Cattle have sufficient quantity and quality of water.

Goal:	<i>Water requirements of cattle shall be met to support their physical needs both in terms of quality and quantity.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>the animals' physiological requirements.</p> <ul style="list-style-type: none"> • Snow must not be used as a sole water source for the following cattle: <ul style="list-style-type: none"> ○ lactating, or ○ newly-weaned, or ○ that have a body condition score of less than 2.5 out of 5, or ○ that don't have access to optimal feed resources. ○ Only adequate quantities of clean, loose snow may serve as the sole water source. • Monitor snow conditions on an ongoing basis. • Have a back-up water source in the event of insufficient loose snow or an interruption in water supply. 	<p>animal access</p> <ul style="list-style-type: none"> • be aware of the signs of stray (tingle) voltage around water sources, such as reluctance to drink or reduced feed consumption • if using a frozen-over natural water source in winter, provide an area of open water and restrict cattle from areas of thin ice. 	<p>animal access</p> <ul style="list-style-type: none"> • be aware of the signs of stray (tingle) voltage around water sources, such as reluctance to drink or reduced feed consumption • if using a frozen-over natural water source in winter, provide an area of open water and restrict cattle from areas of thin ice.

ANIMAL HEALTH AND WELFARE

Animal health and welfare is monitored and maintained as per the relevant National Farm Animal Care Council Code of Practice; sick and injured animals are treated appropriately.

Goal:	<i>Cattle shall be monitored on an ongoing basis to ensure prompt and appropriate treatment or care.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
Willful Acts of Abuse or Egregious Acts of Neglect as it relates to animal health/welfare.	<p>The following requirements in the Beef Code of Practice are met.</p> <p>Beef Code of Practice, Section 1.1: Protection from Extreme Weather</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Cattle must have access to areas, either natural or man-made, that provide relief from weather that is likely to create a serious risk to their welfare. • Promptly assist individual cattle showing signs of not coping with adverse weather (see Sections 1.1.1 and 1.1.2 for lists of signs). • Provide additional feed to meet animals' increased 	<p>Two of the recommended practices below are implemented.</p> <p>Beef Code of Practice, Section 2.1: Nutritional and Feed Management</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • avoid sudden or extreme ration changes • provide a less competitive feeding environment for sick, injured, weak or convalescing cattle. <p>Beef Code of Practice, Section 3.2: Sick, Injured and Cull Cattle</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • consult a veterinarian to address new, unknown, or 	<p>Three or more of the recommended practices below are implemented.</p> <p>Beef Code of Practice, Section 2.1: Nutritional and Feed Management</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • avoid sudden or extreme ration changes • provide a less competitive feeding environment for sick, injured, weak or convalescing cattle. <p>Beef Code of Practice, Section 3.2: Sick, Injured and Cull Cattle</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • consult a veterinarian to address new, unknown, or suspicious illness or death losses • consult a veterinarian if the incidence of a known illness

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Goal:	<i>Cattle shall be monitored on an ongoing basis to ensure prompt and appropriate treatment or care.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>energy requirements when facing cold stress.</p> <p>Beef Code of Practice, Section 1.1.1: High Temperature and Humidity</p> <p><u>Requirements:</u></p> <p>a. When cattle are showing signs of heat stress, consider the following strategies:</p> <ul style="list-style-type: none"> • provide shade • avoid handling cattle • feed cattle at dusk or dawn • moisten the ground in part of the pen • sprinkle cattle with water. <p>Beef Code of Practice, Section 1.1.2: Extreme Cold</p> <p><u>Requirements:</u></p>	<p>suspicious illness or death losses</p> <ul style="list-style-type: none"> • consult a veterinarian if the incidence of a known illness suddenly increases • consult a veterinarian for the most appropriate treatment options when an animal is sick • monitor the progress of treated cattle • dispose of dead cattle according to applicable provincial/municipal regulations <p>The following apply to feedlots only:</p> <p>Beef Code of Practice, Section 3.3.1: Managing Risk of Bovine Respiratory Disease</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • categorize newly-arrived cattle according to risk for 	<p>suddenly increases</p> <ul style="list-style-type: none"> • consult a veterinarian for the most appropriate treatment options when an animal is sick • monitor the progress of treated cattle • dispose of dead cattle according to applicable provincial/municipal regulations. <p>The following apply to feedlots only:</p> <p>Beef Code of Practice, Section 3.3.1: Managing Risk of Bovine Respiratory Disease</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • categorize newly-arrived cattle according to risk for BRD and other illness and apply appropriate receiving protocols • whenever possible, buy calves of known source, vaccination history, and health status

Animal health and welfare is monitored and maintained as per the relevant National Farm Animal Care Council Code of Practice; sick and injured animals are treated appropriately.

Goal:	<i>Cattle shall be monitored on an ongoing basis to ensure prompt and appropriate treatment or care.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>b. provide bedding to insulate against bare ground and to reduce mud and manure build-up on hides, which can increase heat loss.</p> <p>Beef Code of Practice, Section 3.2: Sick, Injured and Cull Cattle</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Monitor cattle health on an ongoing basis to ensure prompt treatment or care. • Provide appropriate care, convalescence or treatment for sick, injured or lame cattle without delay, and access to feed and water. • Monitor the animals' response to therapy or care and, if the initial treatment protocol fails, then reassess treatment options or seek veterinary advice. 	<p>BRD and other illness and apply appropriate receiving protocols</p> <ul style="list-style-type: none"> • whenever possible, buy calves of known source, vaccination history, and health status <p>Beef Code of Practice, Section 3.3.2: Lameness</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • manage pen conditions to minimize mud and standing water • work with your veterinarian to identify and resolve sudden increases in the incidence of lameness <p>Beef Code of Practice, Section 3.3.3: Nutritional Disorders Associated with High Energy Feeding</p>	<p>Beef Code of Practice, Section 3.3.2: Lameness</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • manage pen conditions to minimize mud and standing water • work with your veterinarian to identify and resolve sudden increases in the incidence of lameness <p>Beef Code of Practice, Section 3.3.3: Nutritional Disorders Associated with High Energy Feeding</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • monitor feed bunks to assess prior consumption and adjust feeding accordingly • include forage of effective particle length in all diets to reduce sub-acute ruminal acidosis • consider adjusting rations to

Animal health and welfare is monitored and maintained as per the relevant National Farm Animal Care Council Code of Practice; sick and injured animals are treated appropriately.

Goal:	<i>Cattle shall be monitored on an ongoing basis to ensure prompt and appropriate treatment or care.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>The following apply to feedlots only:</p> <p>Beef Code of Practice, Section 3.3.1: Managing Risk of Bovine Respiratory Disease</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Monitor the behavior of newly-arrived feedlot cattle to facilitate the early detection of illness. • Have a disease prevention strategy for new arrivals into a feedlot. <p>Beef Code of Practice, Section 3.3.2: Lameness</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Provide appropriate care, convalescence or treatment for lame cattle without delay, and access to feed and water. • Monitor the animals' 	<p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • monitor feed bunks to assess prior consumption and adjust feeding accordingly • include forage of effective particle length in all diets to reduce sub-acute ruminal acidosis • consider adjusting rations to prevent digestive disorders when cattle feed intake is interrupted (due to storm, power outage, machinery breakdown, etc.). <p>Beef Code of Practice, Section 3.3.4: Buller-Steer Syndrome</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • monitor closely for relapse if bullers are re-introduced to their home pen 	<p>prevent digestive disorders when cattle feed intake is interrupted (due to storm, power outage, machinery breakdown, etc.).</p> <p>Beef Code of Practice, Section 3.3.4: Buller-Steer Syndrome</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • monitor closely for relapse if bullers are re-introduced to their home pen

Animal health and welfare is monitored and maintained as per the relevant National Farm Animal Care Council Code of Practice; sick and injured animals are treated appropriately.

Goal: *Cattle shall be monitored on an ongoing basis to ensure prompt and appropriate treatment or care.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
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	<p>response to therapy or care and, if the initial treatment protocol fails, then reassess treatment options or seek veterinary advice.</p> <p>Beef Code of Practice, Section 3.3.3: Nutritional Disorders Associated with High Energy Feeding</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Design, implement, evaluate and adjust your feeding program to reduce the risk of nutrition-induced disorders, and consult your veterinarian or a nutritionist when needed. • Transition cattle from high-forage to high-energy rations gradually to avoid abrupt dietary changes. 		
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Goal:	<i>Cattle shall be monitored on an ongoing basis to ensure prompt and appropriate treatment or care.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Beef Code of Practice, Section 3.3.4: Buller-Steer Syndrome <u>Requirements:</u> <ul style="list-style-type: none"> • Bullers must be promptly removed from their pen. 		

ANIMAL HEALTH AND WELFARE

<i>Animal health products are responsibly used and disposed.</i>			
Goal:		Animal health products shall be used in a responsible manner and through a valid vet/client/patient relationship when required. Efforts shall be made to appropriately dispose of animal health products and related equipment.	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
No valid Vet-Client-Patient relationship.	<p>Valid Vet-Client-Patient-Relationship.</p> <p>Processes shall be in place to store and use animal health products according to label directions and/or vet prescription.</p> <p>Used bottles/containers and expired drugs shall be disposed according to local availability.</p>	<p>Documented vaccination, parasiticide and treatment records (group and/or individual).</p> <p>Documented veterinary health protocols for vaccination, parasite control, and treatment of sick cattle.</p> <p>Worker training on accurate disease diagnosis and proper use of animal health products provided by veterinarian.</p> <p>Documented herd health program developed in collaboration with veterinarian.</p>	<p>Individual animal health treatment records are kept.</p> <p>Producer and veterinarian work together and regularly monitor disease risks to improve animal health through good animal husbandry practices.</p> <p>Collaborative efforts are made to improve animal health or husbandry through innovative methods, such as participation in research.</p>

ANIMAL HEALTH AND WELFARE

Steps are taken to mitigate/minimize animal pain and distress.

Goal:	<i>Animal pain shall be minimized or mitigated during physical procedures on cattle when possible.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
Pain control requirements in the Beef Code of Practice are not followed, unless under veterinarian recommendation.	<p>The following requirements in the Beef Code of Practice are met.</p> <p>Beef Code of Practice, Section 4.2 Reproduction and Calving Management</p> <ul style="list-style-type: none"> Caesarean sections must be conducted by a veterinarian or qualified trained personnel using accepted surgical techniques and appropriate local anesthesia and post-operative pain control. Consult your veterinarian on pain control when spaying heifers. <p>Beef Code of Practice, Section 4.3: Identification</p> <p><u>Requirement:</u></p> <ul style="list-style-type: none"> Do not brand wet cattle due to risk of scalding. 	<p>Two of the recommended practices are implemented.</p> <p>Beef Code of Practice, Section 4.4: Disbudding and Dehorning</p> <p><u>Recommended practices:</u></p> <ol style="list-style-type: none"> use homozygous polled bulls where practical to eliminate the need for disbudding or dehorning. avoid dehorning at the time of weaning to reduce stress. <p>Beef Code of Practice, Section 4.5: Castration</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> consult your veterinarian about pain mitigation strategies for castration. avoid castrating at the time of weaning to reduce stress. when castrating weaned cattle, use banding to reduce 	<p>Three or more of the recommended practices are implemented.</p> <p>Beef Code of Practice, Section 4.4: Disbudding and Dehorning</p> <p><u>Recommended practices:</u></p> <ol style="list-style-type: none"> use homozygous polled bulls where practical to eliminate the need for disbudding or dehorning. avoid dehorning at the time of weaning to reduce stress. <p>Beef Code of Practice, Section 4.5: Castration</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> consult your veterinarian about pain mitigation strategies for castration. avoid castrating at the time of weaning to reduce stress. when castrating weaned cattle, use banding to reduce the risk of excessive bleeding, and for

Steps are taken to mitigate/minimize animal pain and distress.

Goal:		<i>Animal pain shall be minimized or mitigated during physical procedures on cattle when possible.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>Beef Code of Practice, Section 4.4: Disbudding and Dehorning</p> <p><u>Requirement:</u></p> <ul style="list-style-type: none"> Dehorning must be performed only by competent personnel using proper, well-maintained tools and accepted techniques. Seek guidance from your veterinarian on the availability and advisability of pain control for disbudding or dehorning beef cattle. Disbud calves as early as practically possible, while horn development is still at the horn bud stage (typically 2-3 months). Use pain control, in consultation with your veterinarian to mitigate pain associated with dehorning calves after horn bud attachment. 	<p>the risk of excessive bleeding, and for operator safety.</p> <ul style="list-style-type: none"> ensure that tetanus vaccinations are current when applying bands to castrate bulls over 180kg (400lbs). monitor calves after castration. Check calves frequently to ensure that they are nursing or eating, and that there are no signs of infection and/or abnormal post-surgical bleeding. identify and record improperly castrated cattle or those with undescended testicles for appropriate further management. 	<p>operator safety.</p> <ul style="list-style-type: none"> ensure that tetanus vaccinations are current when applying bands to castrate bulls over 180kg (400lbs). monitor calves after castration. Check calves frequently to ensure that they are nursing or eating, and that there are no signs of infection and/or abnormal post-surgical bleeding. identify and record improperly castrated cattle or those with undescended testicles for appropriate further management.

Steps are taken to mitigate/minimize animal pain and distress.

Goal:		<i>Animal pain shall be minimized or mitigated during physical procedures on cattle when possible.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>Beef Code of Practice, Section 4.5: Castration</p> <p><u>Requirement:</u></p> <ul style="list-style-type: none"> • Castration must be performed by competent personnel using proper, clean, well-maintained instruments and accepted techniques. • Seek guidance from your veterinarian on the optimum method and timing of castration, as well as the availability and advisability of pain control for castrating beef cattle. • Castrate calves as young as practically possible. • Use pain control, in consultation with your veterinarian, when castrating bulls older than nine months of age. <p>EFFECTIVE JANUARY 1, 2018:</p> <p>Use pain control, in consultation with your veterinarian, when</p>		

Steps are taken to mitigate/minimize animal pain and distress.

Goal:		<i>Animal pain shall be minimized or mitigated during physical procedures on cattle when possible.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	castrating bulls older than six months of age.		

ANIMAL HEALTH AND WELFARE

Decision points for euthanasia are clear and methods of euthanasia are acceptable.

Goal: *Cattle shall be euthanized following the requirements in the applicable National Farm Animal Care Council Code of Practice.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
<p>Euthanasia conducted by incompetent personnel using inappropriate equipment.</p> <p>Failure to euthanize per the Beef Code of Practice requirements.</p>	<p>The following requirements in the Beef Code of Practice are met.</p> <p>Beef Code of Practice, Section 6.1: Euthanasia and Culling Decisions</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Euthanize (or cull*) without delay cattle that: <ul style="list-style-type: none"> ○ are unlikely to recover, or ○ fail to respond to treatment and convalescent protocols, or ○ have chronic, severe, or debilitating pain and distress, or ○ are unable to get to or consume feed and water, or ○ show continuous weight 	<p>Training for workers on how to euthanize cattle (if workers euthanize animals on-farm).</p> <p>Record of deaths and euthanized cattle.</p>	<p>Written non-ambulatory protocol or early salvage plan that is followed, reviewed and updated as needed.</p>

Decision points for euthanasia are clear and methods of euthanasia are acceptable.

Goal: *Cattle shall be euthanized following the requirements in the applicable National Farm Animal Care Council Code of Practice.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>loss or emaciation.</p> <p>Beef Code of Practice, Section 6.2: Methods of On-Farm Euthanasia</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • An acceptable method for euthanizing cattle must be used (see Table 6.1). • Euthanasia must be performed by competent personnel (through training, experience, or mentorship). • Equipment used for euthanasia, such as guns or captive bolt devices, must be maintained according to manufacturers' instructions to ensure proper function. <p>Beef Code of Practice, Section 6.3: Confirmation of Insensibility and Death</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Evaluate the animal's consciousness immediately 		

Decision points for euthanasia are clear and methods of euthanasia are acceptable.

Goal: *Cattle shall be euthanized following the requirements in the applicable National Farm Animal Care Council Code of Practice.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>after the application of the appropriate euthanasia method by checking for a corneal reflex (see Code).</p> <ul style="list-style-type: none"> • Be prepared to immediately deliver a second application should the first attempt not render the animal immediately insensible. • Confirm death before moving or leaving the animal (see Code). • Confirm insensibility: <ul style="list-style-type: none"> ○ Touch the eyeball and note if the animal blinks (corneal reflex). An insensible animal will not blink. • Confirm death: A lack of heartbeat and respiration should be used to confirm death: <ul style="list-style-type: none"> ○ Evaluate heartbeat by physical palpation or by placing a stethoscope over the left lower chest area of the animal, just 		

Decision points for euthanasia are clear and methods of euthanasia are acceptable.

Goal: *Cattle shall be euthanized following the requirements in the applicable National Farm Animal Care Council Code of Practice.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	behind the elbow. ○ Evaluate respiration by observing the chest for any breathing movement. Note that breathing may be slow and erratic in an unconscious animal.		

ANIMAL HEALTH AND WELFARE

Feeding areas and pastures allow cattle to express normal behaviours including resting postures.

Goal:	<i>Cattle shall be kept in an environment conducive to normal behaviour in feeding areas and pastures.</i>
No (Score: 0)	Achievement (Score: 1)
Entry Threshold.	Adequate space shall be provided for cattle to express normal behaviour (i.e. all cattle are able to lay down at the same time; cattle can move freely and access feed and water).

ANIMAL HEALTH AND WELFARE

Unnecessary animal stress is minimized.

Goal: *Animal caretakers shall minimize cattle stress in the context of handling, loading and unloading, transportation, cattle facilities and environmental conditions and recognize and react appropriately to signs of stress.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
Inability to understand and implement low stress handling practices.	<p>The requirements in the Beef Code of Practice below are met.</p> <p>Beef Code of Practice, Section 4.1: Handling and Moving Cattle</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> • Animal handlers must be familiar with cattle behavior (through training, experience or mentorship) and use quiet handling techniques. • Electric prods must only be used to assist movement of cattle when animal or human safety is at risk or as a last resort when all other humane alternatives have failed and only when cattle have a clear path to move. • Do not use electric prods repeatedly on the same animal. 	<p>Two of the recommended practices below are implemented.</p> <p>Beef Code of Practice, Section 4.1: Handling and Moving Cattle</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • adjust your handling techniques and positioning according to the response of the animals and the situation • take a course in cattle handling techniques; mentorship/learning • use handling tools, such as flags, plastic paddles or rattles, to direct animal movement • evaluate your cattle handling techniques regularly, and make improvements to them as needed . 	<p>Three or more of the recommended practices below are implemented.</p> <p>Beef Code of Practice, Section 4.1: Handling and Moving Cattle</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> • adjust your handling techniques and positioning according to the response of the animals and the situation • take a course in cattle handling techniques; mentorship/learning • use handling tools, such as flags, plastic paddles or rattles, to direct animal movement • evaluate your cattle handling techniques regularly, and make improvements to them as needed • Factors to consider include the percentage of cattle: <ul style="list-style-type: none"> ○ falling (belly or torso touches the ground) during handling

Unnecessary animal stress is minimized.

Goal: *Animal caretakers shall minimize cattle stress in the context of handling, loading and unloading, transportation, cattle facilities and environmental conditions and recognize and react appropriately to signs of stress.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<ul style="list-style-type: none"> Do not use electric prods on the genitals, face, udder or anal areas. Do not use electric prods on calves less than three months of age that can be moved manually. <p>Beef Code of Practice, Section 1.2: Facilities for All Cattle</p> <p><u>Requirements:</u></p> <ul style="list-style-type: none"> All beef operations must have access to equipment or facilities for the safe handling, restraint, treatment, segregation, loading, and unloading of cattle. Provide traction in handling areas to minimize cattle slips and falls. <p>Operation shall be aware of the Recommended code of practice</p>	<ul style="list-style-type: none"> Factors to consider include the percentage of cattle: <ul style="list-style-type: none"> falling (belly or torso touches the ground) during handling stumbling or tripping (knee contacts ground) after being released from the chute requiring the use of electric prods to move running or jumping when leaving the chute vocalizing as a result of restraint. Increasing levels of the above handling events may indicate a need for changes in lighting, noise levels, equipment, handling methods, or environment. <p>Beef Code of Practice, Section 1.2: Facilities for All Cattle</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> ensure that all cattle facilities 	<ul style="list-style-type: none"> stumbling or tripping (knee contacts ground) after being released from the chute requiring the use of electric prods to move running or jumping when leaving the chute vocalizing as a result of restraint. Increasing levels of the above handling events may indicate a need for changes in lighting, noise levels, equipment, handling methods, or environment. <p>Beef Code of Practice, Section 1.2: Facilities for All Cattle</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> ensure that all cattle facilities and areas are safe and free of hazards that can cause injury ensure restraint devices are used properly. Pressure that causes pain or discomfort can cause cattle to panic and should be avoided

Unnecessary animal stress is minimized.

Goal: *Animal caretakers shall minimize cattle stress in the context of handling, loading and unloading, transportation, cattle facilities and environmental conditions and recognize and react appropriately to signs of stress.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>for the care and handling of farm animals: Transportation (CARC, 2001).</p>	<p>and areas are safe and free of hazards that can cause injury</p> <ul style="list-style-type: none"> ensure restraint devices are used properly. Pressure that causes pain or discomfort can cause cattle to panic and should be avoided minimize noise from handling equipment to facilitate movement. High-pitched sounds are especially disturbing to cattle. <p>Beef Code of Practice, Section 5.3: Loading and Receiving</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> Cattle should be provided with enough floor space in a vehicle to maintain their balance and change position within the compartment eliminate gaps between the end of the loading ramp and the vehicle ensure that the loading area promotes smooth flow of 	<ul style="list-style-type: none"> minimize noise from handling equipment to facilitate movement. High-pitched sounds are especially disturbing to cattle. <p>Beef Code of Practice, Section 5.3: Loading and Receiving</p> <p><u>Recommended practices:</u></p> <ul style="list-style-type: none"> Cattle should be provided with enough floor space in a vehicle to maintain their balance and change position within the compartment eliminate gaps between the end of the loading ramp and the vehicle ensure that the loading area promotes smooth flow of cattle on or off the vehicle. Avoid significant changes in floor height or distractions. If a difference in height between the loading surface and the vehicle floor is significant enough to cause balking, a ramp should be used schedule loading and transport to try to avoid long delays in transit (e.g. borders) or at the destination

Unnecessary animal stress is minimized.

Goal: *Animal caretakers shall minimize cattle stress in the context of handling, loading and unloading, transportation, cattle facilities and environmental conditions and recognize and react appropriately to signs of stress.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
		<p>cattle on or off the vehicle. Avoid significant changes in floor height or distractions. If a difference in height between the loading surface and the vehicle floor is significant enough to cause balking, a ramp should be used</p> <ul style="list-style-type: none"> • schedule loading and transport to try to avoid long delays in transit (e.g. borders) or at the destination (e.g. packing plants) • locations receiving cattle should be equipped with personnel or facilities to meet the animals' needs upon arrival, such as water or feed. 	<p>(e.g. packing plants)</p> <ul style="list-style-type: none"> • locations receiving cattle should be equipped with personnel or facilities to meet the animals' needs upon arrival, such as water or feed.

Food

The indicators, goals and requirements within the Food principle help contribute to the safety and quality of beef products. Areas of discussion included: boundaries for food safety responsibility, and the definition/measurement of beef quality.

Similar to the discussion for the Natural Resource indicators, boundaries for food safety can be difficult to define. The requirement for food safety was designed to reflect what is within the control and responsibility of the individual operator. It is recommended that Verified Beef Production™, Food Safety module of proAction® or herd veterinarian be referenced as a resource for information about practices to support beef safety.

The CRSB noted that there are many different interpretations of quality beef. Concerns were raised that an indicator on quality could be interpreted solely in reference to Canadian beef quality grades despite the fact that many production practices contribute to a broader definition of quality. The CRSB has reached consensus on the definition in the glossary.

FOOD

Operation contributes to the production of safe food.

Goal: *Measures shall be taken on the beef production operation to support food safety.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
<p>Knowingly shipping cattle that will end up immediately at slaughter prior to completion of drug withdrawal time or with broken needles without notifying next owner.</p>	<p>Operation shall work with licensed bovine veterinarian when unintended product or dosage is given to determine appropriate drug withdrawal period.</p> <p>Suspect broken needles and other physical risks shall be managed appropriately to avoid entry into the food chain.</p> <p>Ruminant and non-ruminant feed shall be stored separately and separate equipment shall be used for mixing.</p> <p>Withdrawal periods of animal health products shall be followed prior to shipping cattle to slaughter.</p>	<p>On-farm food safety training has been completed (e.g. through industry association programs or veterinary clinics).</p>	<p>Operation can demonstrate with documented records how it has checked the shipments of animals to slaughter to withdrawal periods have been met.</p>

FOOD

Operation contributes to the production of quality beef.			
Goal:		<i>Operation shall be aware of and/or adopt management practices that seek to enhance quality beef.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Operation shall be aware of the factors that influence quality beef (see glossary).	Animal management practices that optimize the production of quality beef (see glossary) are employed.	Operation has a documented strategy to enhance quality beef (see glossary).

Efficiency and Innovation

The indicators, goals and requirements within the Efficiency and Innovation Principle aim to promote efficiency, innovation, economic viability and reduce waste. Some issues the CRSB has aimed to address include: the responsible use of technology, the scale and expectations for continuous improvement, and limited access to recycling facilities.

Producers are constantly seeking to increase efficiency on their operations. In fact, many operations are already highly efficient due to modern agricultural innovations and research such as machinery and genetic technologies. It is important to note that the use of technology and innovation should be done responsibly, not at the expense of other indicators (e.g. animal care should not be compromised to increase efficiency), and in compliance with all applicable laws and regulations. Interpretation of these indicators should not ban or require the use of any technology or innovation but rather stress responsible use.

The CRSB recognizes that the scale and expectations for continuous improvement need to be realistic. The size of an operation, for example, may play a role in the improvements that can be made. The Standard should be interpreted to allow for producers to embrace innovation and make efficiency improvements at a realistic cost without penalizing the early adopters.

In many rural areas, there is limited to no access to services such as recycle or disposal facilities. The Standard takes into account these rural realities in order to set realistic expectations. The CRSB hopes that, where services (e.g. recycle) are not available, opportunities for innovation and education will arise.

EFFICIENCY AND INNOVATION

Operation reduces, reuses and recycles, as feasible facilities, services and technologies exist or become available.

Goal: *Operation shall reduce, reuse and recycle wherever feasible.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Operation shall identify the types of (non-nutrient) waste it generates and make efforts to reduce waste.	Operation reduces, reuses or recycles farm or ranch-related items, given local availability of services.	Operation implements a reuse and/or recycling strategy and can demonstrate evidence of waste reduction.

EFFICIENCY AND INNOVATION

Energy resources are responsibly used.			
Goal:	<i>Efficient sources of energy are considered and adopted, where feasible.</i>		
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Operation shall be aware of their energy inputs, including fuel.	Energy efficient options are considered.	Energy efficient options are adopted.

EFFICIENCY AND INNOVATION

Innovation and technology are utilized to improve responsible production.			
Goal:		<i>Innovation and technology shall be utilized to improve production efficiency in a responsible manner.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Operation shall have animal productivity goals.	Practices to improve production efficiency are utilized.	Operation monitors and documents cattle performance.

EFFICIENCY AND INNOVATION

Crop input products are safely and responsibly used, stored and disposed.⁶

Goal: *Crop input products such as fertilizers, pesticides and fungicides shall be used, stored and disposed of in a safe and responsible manner.*

Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	<p>Crop input products shall be stored in a manner that reduces risk of contamination and pollution.</p> <p>Crop input products shall be used according to label instructions.</p> <p>Disposal of crop input products shall be undertaken according to local availability (or repurposed).</p>	<p>Persons using crop input products are trained on safe handling and application of those products.</p> <p>Spills are managed appropriately.</p> <p>Operation manages according to a 4R nutrient stewardship plan and/or an integrated pest management plan.</p>	<p>4R and/or Integrated Pest Management Plans are documented and reviewed annually and applied in a precise way according to label/soil test recommendation.</p> <p>An emergency spill plan is in place and documented.</p>

⁶ This indicator applies only to producers who use crop input products.

EFFICIENCY AND INNOVATION

Continuous learning regarding beef production is pursued.			
Goal:		<i>Continuous learning about sustainability in beef production shall be undertaken.</i>	
Entry Threshold (Score: 0)	Achievement (Score: 1)	Innovation (Score: 2)	Excellence (Score: 3)
	Within the last 5 years, operation shall have engaged in at least one learning activity in one of the five principles of sustainable beef (natural resources, people and the community, animal health and welfare, food, and efficiency and innovation).	Within the last 5 years, operation has engaged in at least one learning activity in three of the five principles of sustainable beef (natural resources, people and the community, animal health and welfare, food, and efficiency and innovation).	Within the last 5 years, operation has engaged in at least one learning activity learning in all five principles of sustainable beef (natural resources, people and the community, animal health and welfare, food, and efficiency and innovation).

CHALLENGES TO IMPLEMENTATION

The CRSB recognizes that there may be challenges associated with implementing the Standard. Some of these challenges broadly include:

- i. increased costs and time;
- ii. lack of financial resources;
- iii. lack of financial incentives to change current practices;
- iv. lack of awareness and education around some of the topics the indicators seek to address;
- v. lack of practical science-based tools to measure outcomes accurately;
- vi. lack of clarity on indicators and how to achieve;
- vii. lack of access to approved medication for the treatment of animals in Canada;
- viii. shortage of labour and trained personnel;
- ix. detrimental environmental conditions (e.g. “Acts of God”);
- x. misinterpretation of information;
- xi. public misconceptions about industry practices and sustainability;
- xii. tradeoffs between implementation of some indicators and economic sustainability; and
- xiii. potential conflicts between implementation of indicators.

The CRSB is working to address many of these challenges through its three pillars of work.

REFERENCES

Acton, D.F. and Gregorich, L.J. (eds.). 1995. The health of our soils - towards sustainable agriculture in Canada. Centre for Land and Biological Resources Research, Research Branch, Agriculture and Agri-Food Canada, Ottawa, ON. xiv + 138 pp. Retrieved from http://sis.agr.gc.ca/cansis/publications/manuals/1995-health/The_Health_of_Our_Soils.pdf (Accessed November 1, 2017).

Agriculture and Agri-Food Canada. (2014). Riparian area management. Retrieved from <http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/soil-and-land/riparian-areas/riparian-area-management/?id=1187631191985> (Accessed November 1, 2017).

Beef Cattle Code Development Committee. (2013). Code of practice for the handling and care of beef cattle. National Farm Animal Care Council, pp. 68. Retrieved from: http://www.nfacc.ca/pdfs/codes/beef_code_of_practice.pdf (Accessed November 1, 2017).

Canadian Agricultural Safety Association (CASA). (2015). Toolbox talks – Learning from close calls. Retrieved from: <http://www.agsafetyweek.ca/uploads/1/3/3/4/13345670/19.pdf> (Accessed November 1, 2017).

Canadian Agri-Food Research Council. (1998). Recommended code of practice for the handling and care of farm animals: veal calves. Canadian Agri-Food Research Council, pp. 27 http://www.nfacc.ca/pdfs/codes/veal_calves_code_of_practice.pdf (Accessed November 1, 2017).

Canadian Agri-Food Research Council (CARC). (2001). Recommended code of practice for the care and handling of farm animals: Transportation. CARC, Ottawa, ON. Retrieved online: http://www.nfacc.ca/pdfs/codes/transport_code_of_practice.pdf (Accessed November 1, 2017).

Canadian Feedlot Animal Care Assessment Program (CFACAP) (2015). Instructions, standards and common audit tool. June 2017 Edition, Version 4. National Cattle Feeders Association, Calgary, AB.

Canadian Veterinary Medical Association (CVMA). (2016). The importance of the veterinarian-client-patient-relationship. Retrieved from: <https://www.canadianveterinarians.net/documents/importance-of-vcpr> (Accessed November 1, 2017).

Cows and Fish. (N.D). What is riparian? Retrieved from <http://cowsandfish.org/riparian/riparian.html> (Accessed November 1, 2017).

Dairy Code Development Committee. (2009). Code of practice for the handling and care of dairy cattle. National Farm Animal Care Council, pp. 67. Retrieved from: http://www.nfacc.ca/pdfs/codes/dairy_code_of_practice.pdf (Accessed November 1, 2017).

- Fertilizer Canada. (2017). Nutrient stewardship. Retrieved from: <https://fertilizercanada.ca/nutrient-stewardship/> (Accessed November 1, 2017).
- Global Rangelands. (2017) SRM Glossary. Retrieved from <https://globalrangelands.org/glossary/O?term> (Accessed November 1, 2017).
- Intergovernmental Panel on Climate Change (IPCC). (2005). IPCC special report on carbon dioxide capture and storage. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [Metz, B., O. Davidson, H. C. de Coninck, M. Loos, and L. A. Meyer (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 442 pp. Retrieved from https://www.ipcc.ch/pdf/special-reports/srccs/srccs_wholereport.pdf (Accessed November 1, 2017).
- Nature Conservancy of Canada (NCC). (2016). What's up with watersheds? Retrieved from <http://www.natureconservancy.ca/en/what-you-can-do/learn-more/watersheds.html>
- Sessa, V. I. and London, M. (2015). Continuous learning in organizations: Individual, group, and organizational perspectives, 3rd Edition. Psychology Press: New York, NY, pp. 416.
- Sustainable Agriculture Network (SAN). (2017). Sustainable Agriculture Standard: For farms' and producer groups' crop and cattle production (Version 1.2). Red de Agricultura Sostenible: A.C.
- von Borell, E. (2000). Stress and coping in farm animals. Arch. Tierz. (Dummerstorf) 43 (Sonderheft), pp. 144-152.