

CAPTURING BENEFITS BY REDUCING BEEF EMISSIONS

Beef producers can use these protocols to improve production efficiency and qualify for carbon offsets under the Alberta Offset System

Alberta has introduced first-of-its-kind legislation in North America that gives agricultural producers new ways to benefit from helping to reduce greenhouse gas emissions. The result is the Alberta Offset System, which includes a number of protocols producers can follow in order to earn carbon offsets from documented improvements to practice changes. These may be sold in the growing carbon offset market.

Alberta Agriculture and Rural Development (ARD) has developed a series of Protocol Summary documents to provide producers with a brief introduction to each of the protocols related to agriculture – including the one you are reading here on three protocols related to beef production. Producers interested in pursuing projects that meet the requirements of these protocols can get more information through the website links and contact information provided at the end of this document.

Record keeping is critical. To qualify for offsets, producers need to document practices for the periods both before and after they adopt emissions-reducing practice changes. This is critical not only to earn offsets, but to protect producers from liability if there is any challenge to the carbon offset credits they are claiming.

THE OPPORTUNITY FOR PRODUCERS

A top priority for the development of protocols that relate to agriculture is to focus on opportunities that have value for improving production in their own right, yet also accomplish the goal of reducing greenhouse gas emissions.

Three beef production protocols are available under the Alberta Offset System that offer different approaches to successfully achieve these dual benefits. Producers can use these protocols to improve production efficiency while qualifying for carbon offsets at the same time.

Toolbox of options. One protocol focuses on the opportunity with feeding edible oils, while two others provide a broad framework under which producers can choose to pursue many different options.

- **Feeding edible oils** – This protocol is a proven practice that results in an improved feed-to-gain ration, while also cutting the amount of methane emitted by the animal.
- **Reducing age at harvest** – This protocol captures a broad range of different options producers have to improve their production efficiency, while reducing methane and nitrous oxide emissions from the animal and from manure.

- **Reducing days on feed** – This protocol offers similar flexibility to the second protocol but only applies to the feedlot finishing phase. It allows producers to use a broad range of options that result in greater production efficiency when a new technology is used, resulting in less methane and nitrous oxide emissions from cattle and from manure.

BOTTOM LINE BENEFITS

The end result is two ways for producers to benefit.

Ramped-up efficiency. The protocols offer structured approaches to making real, measureable efficiency improvements.

Additional revenue through carbon offsets. The bonus is that greenhouse gas emissions are reduced and this creates new revenue potential under the Alberta Offset System. This system rewards producers for their contribution by qualifying for carbon offsets, which they can use to earn some extra dollars in the emerging carbon offset market.

“THE PROTOCOLS ARE ABOUT MULTIPLE BENEFITS. FIRST AND FOREMOST, THEY CAN IMPROVE PRODUCTION. THEY ALSO REWARD PRODUCERS FOR BEING PART OF THE SOLUTION TO THE REDUCTION OF GREENHOUSE GAS EMISSIONS.”



GENERAL REQUIREMENTS

All offset projects, including those using beef production protocols, must meet three basic requirements:

- **Records proving 'before' and 'after' conditions** – Producers need appropriate records that show the relevant conditions for their operations both before and after the practice change is adopted. The new approach must represent clear practice change considered beyond “business as usual” or common industry practice.
- **Clear right to claim** – The producer selling carbon offsets need to clearly show ownership of the offsets or the right to claim the offsets. In other words, they own the operation or have a legal agreement that gives them rights to offsets for that operation.

Capturing Credits Back to 2002. Producers may claim carbon offsets based on eligible practices adopted at any time between 2002 and the current year, as long as requirements such as having necessary records are met. However, this option will not be available after January 1, 2012 due to increased verification requirements.

FUNDAMENTALS OF THE THREE PROTOCOLS

Beef producers can choose to pursue one, two or all three of the protocols. They are designed to work well both individually and together. Here are the fundamentals for each option.

Feeding Edible Oils

The Protocol for Feeding Edible Oils to Beef Cattle is aimed at reducing the release of methane – a potent greenhouse gas that is a byproduct of the digestion of feed materials in the rumen. This process is called “enteric fermentation emissions.” Reducing the amount of methane released by cattle results in greater conversion of feed into animal gain, and increases overall efficiency of the operation.

Focus is in the feedlot. The target of this protocol is for beef producers to capture the benefits of adding edible oils to the finishing diet of feedlot cattle.

Recipe is four-to-six percent oils (dry matter basis). It calls for producers to add these oils in the range of four to six percent, dry matter basis, of the finishing diet of feedlot cattle. (A level over six percent has no value for reducing emissions and is not advised since it can compromise animal health).

Can provide as oil or seed. The edible oils may be added either in the form of oil or by seed. If by seed, the calculation of four to six percent must be adjusted by oil content.

Opportunity to cut emissions

20 percent. While cattle are on this diet, the reduction in enteric methane emissions is approximately 20 percent.

'Before' and 'after'

conditions. For this protocol, the baseline condition required is a feeding regime that does not include edible oils in the range of four to six percent, by dry weight, within a three year period prior to project implementation. To earn offsets, producers need to add oils in the target range and collect data on a number of factors related to the animals and the feeding regime. Information on the land base is also important since this is used in calculating the volume of emissions reductions.

Additional key requirement. In addition to the general requirements noted at the beginning of this document, this key requirement is specific to the feeding edible oils protocol:

- **Measurement and monitoring.** The quantification of reductions achieved by the project is based on actual measurement and monitoring (except where indicated in the protocol). This includes: characterization of animal grouping in pre-project and in project years, documented proof of what was fed to cattle prior to and after the incorporation of the revised concentration of edible oils, incoming and outgoing average weights of each grouping of animals being fed and legal land location of the feedlot operation.

Reducing Age at Harvest

The Quantification Protocol for Beef Lifecycle Projects focuses on reducing the age of cattle at harvest. This protocol addresses direct greenhouse gas emissions from the animal and indirect emissions from manure are a fact of life with cattle throughout their lifespan, from their date of birth to harvest. As a result, the less time it takes to get cattle from birth to harvest stage, the fewer emissions these animals produce.

Focus on youthful cattle. The focus of this protocol is on “youthful cattle” which means calf-fed or yearling-fed heifers, steers or bulls. The protocol recognizes that feeder cattle that spend less time in back-grounding lots, on pasture and in the feedlot, result in decreased emissions.

Fewer days means fewer emissions. Fewer days to market and fewer days on lower quality diets means less methane is produced. It also means less manure is produced, stored and handled, which further reduces methane and nitrous oxide emissions. In Canada, beef cattle on average are harvested at 18 months of age, with a range of between 14 and 21 months. The aim of this protocol is to have cattle harvested at the lower end of this range.

Broad ways to achieve. Almost any reasonable practice change that results in reduced days to harvest is an option for producers under this protocol. The protocol does not specify how to get there, it simply provides the framework by which producers can earn offsets using whatever effective measures they choose.

“BETTER FEED-TO-GAIN RATIOS. GREATER OVERALL EFFICIENCY. THESE ARE TWO OF THE KEY BENEFITS THAT DOVETAIL WITH REDUCED EMISSIONS.”

No minimum target. The protocol provides no minimum target to the reduced days to harvest. The important thing is to demonstrate improvement, and there is a lot of flexibility on how to achieve the reductions as long as there are records and it can be verified.

'Before' and 'after' conditions. The baseline condition is defined as the average harvest age of the cattle for the three years prior to project implementation. To qualify for carbon offsets, the producer needs to show that a reduction in age to harvest has occurred as a result of the practice change they have adopted.

Additional key requirements. In addition to the general requirements noted at the beginning of this document, there are several key requirements specific to the beef lifecycle projects protocol.

- **Age verification, traceability.** Producers must have the ability to age verify the cattle, by date of birth, and to trace the age of the animals through the supply chain.
- **CCIA registration.** All cattle included under this protocol must have a birth date registered with Canadian Cattle Identification Agency (CCIA).
- **Materially consistent feeding practices.** The feeding practices used by the farms must be materially consistent with those described in the protocol.
- **Measurement and monitoring.** The quantification of reductions achieved by the project is based on actual measurement and monitoring (except where indicated in the protocol). This includes: proof of birth date to cattle (ie. RFID tag or similar), arrival dates and ages of cattle on entering feedlot, characterization of animal grouping in pre-project and in project years, outgoing weight and age for animals sent to market, legal land location of feedlot operation and any commercial agreements for right to claim the offset.

Reducing Days on Feed

A third project option for beef operations is the Quantification Protocol for Reducing Days on Feed of Cattle.

Similar approach to age at harvest protocol. This protocol has a framework that is very similar to the reducing age at harvest protocol, however it has a much narrower focus – it deals only with the feedlot finishing phase of cattle.

Less days on feed, fewer emissions. The protocol is based on evidence that cattle have fewer days on feed at this stage, under appropriate conditions, and also have lower impact in terms of greenhouse gas emissions. They release less methane and less manure due to an adopted technology. An example of this is Ractopamine hydrochloride (RAC), which is the chemical name for a product which increases muscle mass in cattle through increased protein synthesis with minimal effect on protein breakdown.

'Before' and 'after' conditions. The baseline condition is defined as the average days on feed of the cattle for the three years prior to project implementation.

To qualify for carbon offsets, the producer needs to demonstrate that the cattle raised under the project conditions reached a final desired weight

earlier than the cattle raised under the baseline conditions, due to the practice change.

Additional key requirements. In addition to the general requirements noted at the beginning of this document:

- **Feedlot data.** Producers need good records to confirm number of cattle, incoming and outgoing weights, diets (including both quantity and composition), and days on feed. There is some flexibility in meeting the record requirements, so consult the available Interpretive Guide and full protocol for details.
- **Materially consistent feeding practices.** The feeding practices used by the farms must be materially consistent with those described in the protocol.
- **Measurement and monitoring.** The quantification of reductions achieved by the project is based on actual measurement and monitoring (except where indicated in the protocol). This includes: animal identifier tag, characterization of animal grouping ie. average number of animals/pen, documented proof of what was fed to cattle, incoming and outgoing weight of each animal grouping, legal land location of feedlot and any commercial agreements for right to claim the offset.

LEARN MORE

Producers who are interested in pursuing projects that meet the requirements of the beef production protocol can access more information through the following website links:

Alberta Agriculture and Rural Development – Climate Change:
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/cl11618](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/cl11618)

Alberta Environment – Climate Change:
www.environment.alberta.ca/0923.html

Climate Change Central – Carbon Offset Solutions:
www.carbonoffsetsolutions.ca

These resources include background information, available Interpretive Guides on the protocol, as well as access to the complete Protocol Documents. Producers can also contact ARD directly at (780) 310-FARM (3276) or Toll Free at 1 (866) 882-7677.

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Disclaimer: The information provided in this document is intended as general guidance only, as a first step for agricultural producers considering projects for the Alberta Offset System protocols. Please consult the full Government of Alberta approved protocols and available Interpretive Guides for more complete information before making a decision to pursue practice change aimed at earning carbon offsets.

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