

# Greenhouse Gas MITIGATION

A Beef Sector Report

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## REDUCING METHANE MEANS MONEY TO CATTLE PRODUCERS

Just about any rotational grazing system will benefit the health and productivity of the grass, improve livestock feed efficiency and reduce the amount of methane lost to the atmosphere, say Canadian forage and beef researchers.

The rotation can be as simple or complex as weather or management will allow, but in most cases, avoiding a season-long continuous grazing plan has both environmental and economic advantages, they say.



“A rotational grazing system can produce two main benefits,” says Duane McCartney, a forage and pasture management specialist with Agriculture and Agri-Food Canada’s (AAFC) Lacombe Research Centre. “It helps the grass stay healthy and productive and in turn can improve feed efficiency and lead to improved beef weight

gains.” One recent Manitoba study evaluated rotational grazing at five sites over two years, and the results showed a 2.5 times increase in forage production under rotational grazing versus a continuous grazing system.

### GET IN AND GET OUT

A rotational grazing system should be designed to get cattle in and out; use the grass and then remove cattle so plants can re-grow with time to put down essential root reserves. As well, pastures shouldn’t be used at the same time every year. Under good growing conditions, plants may be able to support more than one grazing pass during a growing season without compromising growth. Under drier conditions, pastures may only be used once each season. In either case, it’s important to develop a grazing rotation so pastures are used at different times each grazing season.

“If you use Pasture One in early spring this year, it should be scheduled for either summer or fall grazing next year, says McCartney. “A rotation should allow plants in each pasture to set seed and fully store root reserves at least once every two or three years.”

Research over the years by specialists such as McCartney, Dr. Paul McCaughey with AAFC’s Brandon Research Centre, and Dr. Karin Wittenberg, a professor in animal science with the University of Manitoba, reinforces the message now being delivered to Canadian cattle producers through the federal Greenhouse Gas Mitigation Program (GHGMP) for Canadian Agriculture.

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## METHANE ECONOMICS

The more methane an animal releases the more energy it is losing. Here's how it works: Ruminant livestock, such as beef and dairy cattle, produce methane as part of the normal digestive process. Methane gas is produced as a byproduct of the fermentation of feedstuffs in the rumen. Most of this methane is emitted from the mouth and nose through eructation and respiration.



“The methane is not just a greenhouse gas,” explains Wittenberg. “It’s lost feed energy that could have been used to produce meat or milk. On average, about two to 12 percent of total feed energy consumed by cattle can be lost as methane gas. In other terms, that is like losing one out of every 10 to 20 round hay bales.”

Supplying cattle with high quality forage can increase feed efficiencies and reduce methane production by about 20 percent in forage based feeding systems. Similar results can be achieved with proper management whether straight grass or mixed legume/grass pastures are grazed.

Manitoba research showed that beef cows grazing an alfalfa-grass stand produced 25 percent less methane than a group on a straight grass pasture. In related studies, steers grazing a grass pasture early in the season, when grass was in its most vegetative state, had 29 to 45 percent reduced methane production compared to grazing steers at mid and late seasons. From a production standpoint, weight gains by animals grazing higher quality forage were significantly higher.

## GRAZING PLANS MAKE IT HAPPEN

Crested wheatgrass works well for a turnout pasture. It’s an early, hardy grass that grows well

under moist or dry conditions. Fertilizing the pasture in the fall will produce even better results, says Wittenberg.

“The fertilizer allows you to get cattle out 10 days to two weeks earlier than if you didn’t fertilize” says McCartney. “The grazing strategy with crested wheatgrass in early spring is to graze it down to the ground.” Beginning in May, grazing it to the ground will delay seed set, and those two to three weeks will give bluegrass and brome pastures time to produce enough growth for grazing in late May or early June.

Pasture scientist Paul McCaughey’s research has looked at more intensive rotational grazing systems, which involve moving cattle through pastures weekly or even daily. “The key is to keep the grass vigorous and in a vegetative state. The grazing plan needs to ensure the forages have time to put down root reserves before the end of the growing season. Plants that are continually grazed and don’t have time to store reserves before freeze up will be less vigorous, less productive and may eventually die out, especially if they are grazed in the same manner year after year.

He notes that single pasture or season-long grazing can work, but when properly done, requires more management to maximize harvest efficiency. The objective is to get the most efficient use of the forage while managing plant energy reserves in a way that won’t deplete plant energy. A number of management techniques including herding, salting and watering practices need to be used to ensure proper distribution of cattle over the whole pasture to prevent cattle from “camping” on favored spots near water. With portable fencing today, it may be easier to manage a rotational system.

The Greenhouse Gas Mitigation Program for Canadian Agriculture, an Agriculture and Agri-food Canada initiative delivered by the Canadian Cattlemen’s Association (CCA), funds demonstration and communication projects which increase producers’ understanding of management practices which reduce or remove atmospheric greenhouse gases.

For more information contact the CCA, visit the Web site at [www.cattle.ca](http://www.cattle.ca) or contact Pat Walker, Beef Project Coordinator at 403-601-8991 or email [pgwalk@shaw.ca](mailto:pgwalk@shaw.ca).

## Greenhouse Gas Mitigation Program for Canadian Agriculture

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