

Greenhouse Gas MITIGATION

A Beef Sector Report

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PASTURE LANDS HELP BALANCE GREENHOUSE GAS EMISSIONS

Properly managed pastures, range and riparian areas are a major potential positive in Canada's greenhouse gas mitigation.

Canada's vast, natural rangelands and managed tame pastures have a new profile thanks to greenhouse gases (GHGs).

Range and tame pastures - especially riparian areas, or zones close to open water with a higher than average moisture supply - can sequester more carbon than they emit, say scientists.

On one hand, they are a storehouse for carbon, but on the other they are vulnerable to physical disturbance. For example, carbon painstakingly stored for many years through good management can be quickly lost if the vegetation is damaged or removed.

Good management practices are essential for range and tame pasture to function efficiently. While they are not a total solution to GHG emissions, it is generally believed emissions can be significantly mitigated using their capacity for carbon storage.

Estimates by range researchers indicate that making slight improvements in overall range quality could as much as offset all GHG emissions from agriculture. Some of these management improvements are easy to implement, such as tailoring forage species to specific environments.

The conclusion is that producers can profit from managing their range and pasture as carbon traps. However, improved management practices should be based on an understanding of the natural function of these areas.

WHY RANGE AND TAME PASTURE MATTER

Grazing management of grasslands and riparian areas has generated interest among producers in recent years, due to the increased awareness of the



benefits in improved productivity. These areas are now taking on another important role - reducing or balancing GHG emissions from agricultural operations.

GHG emissions can be reduced with improved agricultural practices. Research is playing a strong role in this effort - finding ways to increase feed efficiency, improve manure handling, develop cropping systems that reduce soil disturbance and enhance engine fuel efficiency, all of which are factors in emissions.

The potential for healthy plant systems to sequester carbon, thereby offsetting GHG emissions, adds significant value to these efforts.

The process of carbon sequestration is simple. Plants take carbon, in the form of the greenhouse gas carbon dioxide, out of the air. Some of the carbon is converted to energy for growth, but a large amount is stored in their root systems and ultimately the soil.

However, some soils will not be efficient at sequestering carbon, especially those that have plant-growth limiting characteristics such as high

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salt content, those that are regularly disturbed and those that have more material harvested than is replenished.

This is why poorly managed range and tame pastures are a cause for concern for cattle producers, say scientists. Overgrazing and continuous trampling decreases the efficiency and viability of the plant systems.

GOOD MANAGEMENT PRACTICES

Historically, bison herds grazed the prairies. However, the bison travelled over large areas and the vegetation was allowed recovery time between grazing periods. New management practices strive to imitate these natural shifts between use and recovery.

Today's range and tame pasture managers take a more holistic approach, considering the balance of the entire production system. The key is manipulating livestock behaviour. This ensures the health of the vegetation, particularly in riparian areas, can be maintained without completely excluding grazing.

Several new management strategies for producers can improve the health of range, tame pastures and riparian areas. Some examples are:

Forage species. Certain forages are more suitable for knolls while others thrive in low spots. Choosing the right plant composition for a tame pasture can make a big difference in productivity and long-term pasture sustainability.

Rotation. By subdividing pastures and rotating cattle, producers can manage stocking densities and grazing duration to allow the vegetation time for rest and recovery.

Water. Producers can manage pastures and take pressure off riparian areas. For example, developing off-stream watering sites, piping water from a stream, drilling wells or constructing dams in upland areas.

Distribution tools. Placing salt and minerals away from riparian areas will encourage cattle to spend more time in other parts of a pasture.

Timely access. Controlling the amount of time that cattle have access to riparian areas, and

avoiding grazing during particularly sensitive seasons will help assure the health of the plant systems.

DEFINING THE ROLE OF RANGE AND TAME PASTURES

There is some difference of opinion about the impact management will actually have on carbon sequestration.

Scientists agree there is a significant variation in the ability of a highly disturbed and degraded system to store carbon compared to an intact, fully functioning system. The science is less clear regarding the carbon storage ability of specific forage species.

However, there is general agreement that healthy range and pastures can sequester carbon and that the impact of even slight improvements would be immensely valuable. Pasture and range offer a great opportunity to 'harvest' carbon credits to help manage GHG emissions from cattle and cropping systems.

GREENHOUSE GAS CALCULATOR

The Canadian Cattlemen's Association (CCA) has produced a Greenhouse Gas Calculator in an effort to better understand the GHG emissions that result from Canadian beef cattle operations. This is a computer-based calculator that roughly quantifies the amount of carbon equivalents emitted and/or sequestered from a specific operation. Producers interested in getting the calculator are welcome to contact CCA.

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