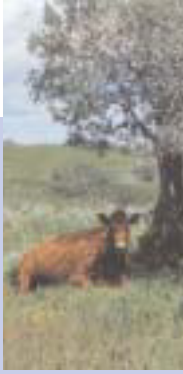
Good Management
practices



Greenhouse Gases and the Canadian Beef Cattle Industry

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The net release of greenhouse gases can be viewed as a measure of the efficient use of resources. Producers can reduce emissions and store carbon in the soil by managing the nitrogen and carbon cycles.

Many practices that reduce emissions also have other beneficial impacts including reduced production costs, and conserving soil, water and wildlife habitat.

Grasslands and Grazing Management

Grasslands represent 26.3 million hectares or one-third of Canada's agricultural land base. They are an important carbon sink.

Poor condition grassland has lower above-ground biomass than comparable land in good condition. The below ground biomass is 4-7 times greater than the above-ground biomass.

Planned grazing systems can increase the amount of soil carbon by improving pasture condition. Taller, deeper-rooted species replace shorter, less productive species. Research indicates that improving the condition on native and tame rangeland on the prairies can result in an increase of 0.2t/ha/yr for up to 20 years.

Practices associated with achieving increases in quality and quantity of pasture forages have the potential to reduce rumen methane emissions and increase soil carbon sequestration.

Some of the practices that improve grasslands include:

- fertilization of tame pastures with manure, compost or inorganic fertilizers;
- grazing strategies which ensure maximum vegetative growth available;
- supplementing grazing with spring-seeded winter annuals;
- re-seeding degraded pasture;
- seeding perennial forage onto marginal cultivated land.

Feeding Efficiencies

While methane production is an unavoidable byproduct of feed fermentation in ruminants such as cattle, there are feeding strategies which decrease its production. Research into decreasing methane losses of feed energy has been a high priority in the cattle industry for many years. Many of the strategies developed can now be recommended as a way of decreasing greenhouse gas emissions (methane) and improving feeding efficiencies in cattle.

Feeding higher quality feeds or improving the ration balance results in less methane being produced in the feed digestion process. Adding grain to the diet, feeding ensiled rather than dried forages and using protein and mineral supplements also have the benefit of decreasing

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the methane produced. Feeding ionophores and lipids such as canola and adding bacterial supplements to feed may also improve feed digestion and so decrease methane production.

The economics of each strategy will be an important consideration.

Manure Management

Practices which reduce nitrous oxide and methane emissions from manure include composting, incorporating manure into the soil quickly and avoiding stockpiling. Swath grazing is another practice to consider because it keeps the manure in the fields and decreases fossil fuel use for transporting forage to the cattle.

Soil Conservation

Cultivated agricultural lands represent two-thirds of Canada's agricultural land base. Soil carbon sequestration on cultivated lands is dependant on three key factors: land tillage practices, plant species selected, and soil nutrient and water inputs.

Agroforestry

Afforestration is the planting of trees on land which was not previously forested. Trees planted on agricultural land are one example. This includes trees planted for shelterbelts and wildlife habitat in riparian areas, and as tree plantations. As such, trees qualify under the Kyoto Protocol as a recognized carbon offset.

In some areas silvopastures, combining trees with forage and livestock production, are a viable option. Grazing/timber systems managed on the same areas of land can increase net carbon storage when properly managed.

Shelterbelts

Shelterbelts and windrows also sequester carbon. According to Agriculture and Agri-Food Canada a mature white spruce shelterbelt one kilometer in length could sequester 80 tonnes of carbon.

The current shelterbelt program in western Canada results in about 6,000 km of trees being planted each year. It is estimated that those trees will sequester a total of 1.7 megatonnes of carbon dioxide between 2008-2012. By the time they are 40 years old they will have sequestered about 9 megatonnes of carbon dioxide.

Shelterbelts and windrows also have other energy saving benefits including:

- Reducing winter heat loss in buildings by up to 25 percent by reducing wind velocities.
- Providing weather protection for livestock and so decreasing feed requirements in the winter.