



fact sheet



LOOKING FORWARD: REDFINING EFFICACY IN RUMINANT FARMING

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Ruminant livestock production has long been a vital part of the Maritime rural economy. Focus on increasing yield per animal and improving labour efficiency have increased use of fossil fuel and led to remarkable changes over the last few decades. Goals now need to be reevaluated and redefined to create new opportunities.


The rapid increases in global population and standard of living primarily in the developing world is predicted to cause a surge in demand for ruminant livestock products, along with increasing attention on their environmental impact. Ruminants are responsible not only for the greenhouse gases they emit directly, but also for the loss of carbon-sequestering forests that have been cleared to feed them, and the environmental impacts caused by the use of stored forage and grain, including erosion of soil carbon, and emission of greenhouse gases from burning fossil fuels to produce fertilizer, transport goods, generate electricity and power machinery. Knowing what to change on farms and how to do it will create opportunities for the ruminant livestock sector in its evolution to meet the new demands of the 21st century.

True Efficiency

Expressing the efficacy of ruminant livestock production simply as kg meat or milk per animal, or as methane emission per animal, will result in the mistaken conclusion that higher production, no matter how it's achieved is desirable. Unless another objective is found, the negative environmental impact of ruminant production, driven by these inadequate measures of efficiency, will continue to escalate and farmers will continue to get a smaller piece of the financial pie than they deserve. A clear, logical definition of efficacy is needed to achieve this goal with careful consideration of which factors should be maximized, and which should be minimized, including both economic benefits and environmental impacts.

Maximize: Farmers must pay more attention to profit than productivity or revenue because of production costs. The value of animal products is increasingly determined by a marketplace that values 'environmentally friendly' goods and services. Carbon credits are a potential new source of revenue wherever farmers can verify permanent reduction in emission of greenhouse gases or sequestration of carbon in the soil

Minimize: Factors that increase the cost of production without raising profit need to be minimized. Optimizing use of imported materials such as grain, fuel, electricity and fertilizer that have hidden environmental impacts during their production and transportation, and minimizing emissions from the cows, soil, and manure storage will become increasingly important in the ruminant livestock sector.



We propose the following efficiency ratio be used to guide the ruminant livestock towards adopting strategies that simultaneously increase farm profit and lessen environmental impact:

Efficiency = \$ Profit per kg greenhouse gas produced

Where:

Profit = (revenue from ruminant product and carbon credits) – costs.

Greenhouse Gas = the sum of emissions (in kg CO₂ equivalents) of associated activities, which includes fossil fuel use on farm, electricity generation from fossil fuel, grain and silage production (including fertilizer) and, of course, greenhouse gases from the livestock.

This new guide for the industry will identify win- win strategies. It focuses specifically on reducing greenhouse gas emissions, but many environmental impacts of ruminants are interrelated and can be simultaneously reduced. For example, ammonia emission, acidification of water and greenhouse gas emission are all related to the use of N fertilizer.

The Future Role of Pasture

Diet is the most important factor affecting environmental impacts of livestock systems. For example, recent studies in Nova Scotia have found that dairy cows in confinement may yield more milk per animal than those on pasture while emitting the same amount of methane. However, grain requirement is much lower in pasture systems compared with confinement because of the higher quality of grazed forage compared with silage. Grain has many hidden costs: besides the cost of the grain itself, one must also consider the materials that went into the production of that grain (most notably fertilizer) and the cost of transporting it. Therefore, the potential for higher productivity per animal in confinement is associated with higher use of grain, electricity fuel and fertilizer, as well as machinery use. In confinement systems reducing greenhouse emissions by reducing inputs may have a negative impact on yield and profitability. Using pastures, on the other hand, reduces the amount of silage required and thus allows farmers to focus on higher quality, reducing the cost and the environmental impacts related to grain requirement, forage harvest and storage facilities, as well as reducing the amount of manure stored on a farm and the greenhouse gas emissions associated with it.

One of the available options for a more sustainable ruminant industry is the use of one of Nova Scotia's great resources: pasture. A recent study on the province's dairy industry indicated that switching from a total confinement system to 7 months of pasturing was accompanied by a drastic decrease in the amount of fuel used for transportation, as well as reduced impacts associated with ozone layer depletion and acid rain.

Responding to society's evolving needs and the financial pressure on farmers requires identifying the right goals for farmers and developing appropriate strategies to meet them.

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