UF-Gainesville Beef Cattle News Corner

Opportunities and challenges for the livestock industries.

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Currently, more than 7 billion people inhabit our planet, and it is predicted we will reach 9.6 billion by 2050. Food demand is expected to increase by 49% and will be driven by population growth and rise in income in low-income countries. But this increased demand has to be realized sustainably, with the goal of balancing economic viability, environmental responsibility and social acceptability. Improving productivity and efficiency so that more meat and milk can be produced with fewer resources is the way livestock producers will insure sustainability. Because consumers are increasingly questioning the way food is produced, the producers will have to demonstrate their dedication to environmental responsibility. Although environmental responsibility encompasses multiple issues, the focus to date has been on greenhouse gas (GHG). US livestock industries made considerable progress in cutting resource use and GHG emissions over time. US beef production in 2007 required 19% less feed, 33% less land, and 12% less water and had a 16% reduction in GHG emission per kg of been compared with production in 1977. This was accomplished through improved cattle growth rates, slaughter weights and crop yields.

Consumer's mistrust of technology in food production is not a new concept and there is an inherent bias toward food or systems perceived better from an animal welfare, environmental impact, or human health perspective. But these perceptions are more emotional than science-based, and the perceived "better" option might actually lead to negative results, especially related to GHG emissions and resource use. For example, the grass-fed beef systems use more land per kg of beef, use 302% more water and produce 68% more GHG emissions compared with traditional beef feedlot systems.

The current principal measure of environmental sustainability is GHG emissions. Methane is a potent GHG with 28 times more warming potential than carbon dioxide (CO2). But when it comes to livestock and climate change, there are many other characteristics that set biogenic methane (methane from cattle) apart from CO2. Here are an important four: it stays in our atmosphere for about 12 years; it's derived from atmospheric carbon, such as CO2; it's part of the biogenic carbon cycle; and it eventually returns to the atmosphere as CO2, making it recycled carbon. The most important difference between the methane from fossil fuels and the methane from ruminants is that the methane from fossil fuels is not derived from atmospheric carbon but it is pulled from the earth, therefore the process brings new methane to the atmosphere. On the other hand, for the biogenic methane, the amount being emitted can equal the amount being destroyed. If a herd of cattle emits the same amount of methane over 12 years, they are contributing to warming for those 12 years. But at the same time, the same amount being emitted is being destroyed through oxidation, and thus the warming is neutral. If we really want to find climate solutions, then we need to accurately understand how various GHG actually warm the planet, because we might miss opportunities to reduce global warming if we misunderstand

the roles different GHG play in climate change. Efforts to reduce biogenic methane are important, but they should not distract us from the more critical need of finding ways to lower the CO2 emissions that arise from the burning of fossil fuels. It is worthwhile to reduce biogenic methane emissions from animal agriculture, as it can buy time for the global community to develop solutions that stop climate change. But we must consider how methane and other GHG actually warm the planet if we want to have long-lasting effects, otherwise we may nonetheless end up with a warmer planet.

Besides emitting GHG, another common criticism of beef production is that cows take up nearly half the land in the US. Overgrazing those lands can degrade soil health and biodiversity. Yet researchers argue that, managed correctly, cows help restore healthy soils, conserve sensitive species and enhance overall ecological function. Proper cattle grazing management can even help mitigate climate change. The whole notion of environmentally friendly 'plant-based' diets ignores much of the methods of agrarian production: ploughing fields releases enormous amounts of carbon into the atmosphere whereas permanent pasture stores CO2.

The challenge to the industry is to adopt a culture of continuous improvement in driving forward sustainable intensification, which will include improved health for animals, people, and the planet; to adopt both existing and new technologies; and to communicate dedication to improving sustainability to all food stakeholders.