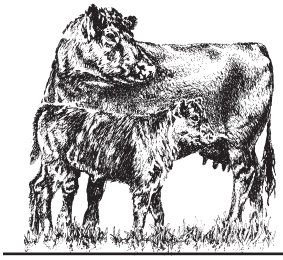

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Miscellaneous Section 1060

Is the Rising Demand for Animal Protein Fueling Climate Change?

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A growing number of stakeholders are becoming concerned about the carbon footprint of human food, and in particular, its animal-based portion. The discussion regarding the carbon footprint of animal protein has gained regional, national, and international momentum. For example, some of Sweden's fast-food chains now offer to their customers—not just price and nutritional facts—but information about the carbon footprint of its tofu-, turkey-, or beef burgers. The world's largest supermarket retailer, Walmart, now requests from its suppliers information regarding the carbon footprint of milk.

Furthermore, San Francisco, CA, officially declared itself on April 6, 2010, the first "Meatless Monday City" in an effort to protect the climate. While some scientists (especially in agriculture) remain climate change skeptics, it should be clear to everyone that animal agriculture is in the midst of a considerable societal debate, which calls for attention from us all.

Much of the discussion about livestock agriculture's contribution to climate change stems from a United Nations Food and Agriculture Organization (FAO) report in 2006, "Livestock's Long Shadow" (LLS) (FAO 2006). This report determined the climate change impact of global livestock production using a method called Life Cycle Assessment, which sums up greenhouse gas (GHG) emissions from the entire production chain. Included in the LLS's calculations were crop production, land-use change (e.g., clearing rainforest to establish pastures and cropland), the animals themselves, and the transportation of final products.

The LLS report concluded that globally 18 percent of human-caused greenhouse gas emissions could be attributed to livestock agriculture, and this was a larger share than transportation. However, the authors of LLS made this claim without actually conducting a similarly comprehensive Life Cycle Assessment for the global transportation sector. Researchers at the University of California Davis in 2009 published a paper, "Clearing the Air: Livestock's Contribution to Climate Change," (Pitesky et al. 2009), which pointed out the flawed LLS comparison between the livestock and transportation sectors. The FAO subsequently admitted its mistake and is publishing a new report.

Additionally, the UC Davis study highlighted that the global percentage is not accurate at the regional or national level because in developed nations, such as the United States, the proportion of greenhouse gas emissions from the livestock agriculture sector is dwarfed by that of the energy and transportation sectors of the economy. For example, according to the GHG emission inventory of the United States from 2009, transportation and electricity production account for 26 and 31 percent of emissions, respectively, while livestock accounts for approximately 3.4 percent.

In countries such as Paraguay, however, the trend is likely reversed because of the small transportation and energy sectors and a relatively large livestock sector (coupled with associated deforestation), which might contribute to more than 50 percent of that country's carbon footprint. These differences in numbers clearly emphasize the need to disaggregate emissions estimates by region and also by livestock species—a step recently undertaken by the FAO and other organizations.

Although researchers do not agree on statistical comparisons of carbon footprint for livestock vs. transportation, all concur with the overall concern that satisfying the upcoming animal protein supply and demands will pose a challenge to the environment. With global animal protein production projected to more than double the current rate by 2050 and the majority of this livestock production growth occurring in the developing world, assessment becomes imperative of the holistic impacts of food animals in the context of global and regional environmental policy and food security.

Much of the growth in the global livestock sector will occur in areas that are currently forested (i.e., parts of South America and southeast Asia). It has been well established that significant reductions of carbon sequestering forests will have large effects on greenhouse gases and possible global climate change.

The fact is apparent that land-use changes associated with livestock (i.e., forested land converted to pasture or cropland used for feed production) are significant sources of anthropogenic GHGs in Latin America and other parts of the developing world. However, it is likely that any kind of land-use change from the original forestland will lead to great increases in carbon emissions. LLS attributes almost one-third to half of the climate-change impact associated with livestock to change in land-use patterns. Transformation of land from forest to crop and livestock agriculture has occurred in the developed countries for centuries to make way for industrialization and general societal wealth.

Not surprisingly, numerous developing countries are currently attempting to develop their economies by turning economically marginal land into production for animals. The United States and most other developed countries have not experienced significant land-use change practices around livestock production within recent decades. Instead, since about the year 1990, forestland has increased by approximately 25 percent in the United States and livestock production has been intensified (concentrated geographically), thus reducing its geographical footprint.

Most importantly, livestock production in the developed world has experienced a marked improvement of efficiencies, leading to significantly decreased numbers of animals to produce a given amount of product that satisfies the nutritional demands of society. For example, it takes five Holstein cows in Mexico to produce the same amount of milk as one of its peers in California!

According to LLS, intensification of livestock production provides large opportunities for climate change mitigation and can reduce greenhouse gas emissions from deforestation, thus becoming a long-term solution to a more sustainable livestock production. Indeed, the authors of LLS are currently working on a follow-up paper, "Shrinking the Shadow," which will focus on ways to show how advanced biotechnologies, improved genetics, nutrition, and comprehensive waste management already utilized in most parts of the developed world can be applied effectively worldwide.

Knowledge already exists to improve efficiency of livestock production, which dramatically reduces GHG per unit of production. What is called for is a global green revolution in animal agriculture, coupled with technology transfers, to supply a growing demand for animal protein using sustainable and modern production practices based on knowledge of animal breeding, nutrition and health care, welfare friendly husbandry practices, and comprehensive waste management. This major effort will allow us to satisfy societal demands for animal protein while providing stewardship for valuable natural resources.

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