



Animal Health and Welfare are Vital to Beef Sustainability

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While beef sustainability is often equated to environmental impact, it also encompasses economic viability and societal acceptance¹. The dramatic increase in global population has resulted in the intensification (increased output of beef per unit of resource input) of agriculture to meet growing food demand. Intensification in the beef industry has received scrutiny because some believe increased productivity comes at the expense of animal health and welfare². In reality, ensuring that cattle are cared for with the highest standards of health and welfare is critical to not only to individual beef producers, but to environmental, social and economic sustainability of the entire beef industry.

Just as people experience stress, cattle can experience stressful events throughout their lives. If stressful events cause cattle to have decreased growth rates, feed conversion efficiency, reproductive rates or lead to an increased susceptibility to illness or death, then all three components of beef sustainability (environmental, social and economic) can be negatively impacted. The interrelationship between animal welfare and sustainability is particularly well illustrated by the nexus be-

tween environmental quality and animal welfare (Figure 1). For example, cattle can be selected for genetic traits allowing them to have improved disease resistance and be more adaptable to challenges in their environment (i.e., drought or heat). In turn, those traits could improve the lifetime efficiency of cattle to convert feed into body weight gain, as cattle that are ill or have difficulty coping with challenging environmental conditions tend to have lower feed conversion efficiencies. Improving lifetime feed efficiency lowers environmental impact and the natural resources required per unit of beef produced, and lowers the cost of production for beef producers. Likewise, improving the comfort of cattle, reducing stressful events and enhancing the ability for cattle to cope with the conditions in which they live can result in positive improvements in physiological and behavioral responses important to cattle welfare and sustainable cattle management. As the preceding example demonstrates, the health and welfare of cattle is inextricably linked to beef sustainability beyond just social acceptance and responsibility to the animals.

Another example of the impact of cattle health and welfare on beef sustainability is transportation. The cow-calf phase of beef production is widely distributed across the U.S. and

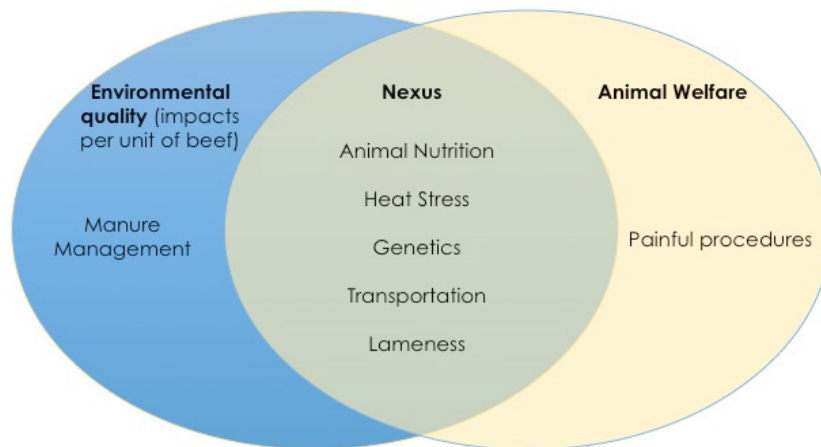


Figure 1. The nexus between environmental impact per unit of beef produced and cattle welfare. Items listed in the nexus are issues that can be “win-wins” (e.g., if heat stress that cattle experience can be mitigated, their productivity and comfort improves, thereby decreasing environmental impacts per unit of beef). Adapted from Place and Mitloehner, 2014³

encompasses more than 765,000 farms with an average herd size of 79 cows and wean 73 calves per year⁴. However, cattle finishing typically takes place in feedlots concentrated in certain geographic locations (e.g., the High Plains); therefore, some cattle must be transported long distances during their lifetimes. Transportation can be a stressful experience for cattle due to handling, noise, stocking density, journey duration, climate and various other factors^{3,5}. The stress of transportation can result in decreased immune function, decreased feed intake and increased illness and mortality³. One management technique to help cattle cope with these stressors is called preconditioning, meaning they undergo a vaccination, nutrition and management program for 30 to 60 days after weaning to better prepare the cattle to cope with such stressors⁵. Aside from preconditioning, creating a low-stress environment prior to, during and upon arrival is essential to managing cattle stress. To accomplish this, cattle are handled and managed properly by trained personnel³. The stress level of the animal upon arrival at a harvesting facility drastically affects the quality of the meat obtained from the animal. Meat from highly stressed cattle tends to be dark and tough, whereas cattle that are less stressed produce a much more desirable and tender product⁶. Reducing stress associated with transportation and handling results in healthier animals, higher quality beef products and decreased food waste, all of which reduces the environmental impact per unit of beef³.

Some stressors that cattle experience, such as weather extremes (i.e., severe heat waves and blizzards), are unavoidable. Thermal stressors affect cattle health, productivity, growth and reproductive performance even long after the weather event occurs^{3,5}. Mitigating the effects of weather extremes is not always feasible, particularly because cattle spend the majority of their lives outdoors. However, some management interventions can improve both animal comfort and productivity, which has a positive impact on the environment. Providing shade or sprinklers in the summertime and shelters or wind breaks in the wintertime can reduce thermal stresses. Reducing thermal stressors improves feed-to-gain ratios, reproductive success and final carcass weight, thereby simultaneously improving animal welfare and lowering environmental impacts per unit of beef^{3,5}.

Eliminating all stressful events from beef production is unrealistic in the same way that humans cannot live their lives completely stress-free. However, management techniques and genetic selection can be used to reduce cattle stress, resulting in simultaneous improvements of animal health and welfare. Animal health and welfare go hand-in-hand, with reducing environmental impact and maintaining economic viability.

Summary

Animal health and welfare are vital to beef sustainability. Healthy and comfortable animals have higher production efficiencies and less impact on the environment. Beef producers positively impact all three components of sustainability (environmental, social and economic) through their commitment to animal health and welfare.

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