

SUSTAINABLE

More Than

PHOTO BY TYLER COLEMAN, NJAA/ANGUS JOURNAL PHOTO CONTEST

ENVIRONMENTAL RESPONSIBILITY



Beef industry sustainability research responds to criticisms.

by *Kasey Brown*, associate editor

Sustainability is a word producers and consumers alike are beginning to hear rather often. This trend is only going to increase in frequency as major corporations like McDonald's and Walmart join the sustainability bandwagon. How does this affect beef producers?

Consumer trends are changing. More consumers tell retailers they want meat from responsibly raised animals, and what's more, they want proof. Kim Stackhouse-Lawson, director of sustainability research for the National Cattlemen's Beef Association (NCBA), explains that the millennial generation, consisting of those born between 1980 and 2000 and making up about a quarter of the United States' population, are leading the charge in calling for sustainable practices. Research actually shows they are willing to pay only a little more for "sustainable" beef, but they may choose other proteins that they perceive as more sustainable, she adds.

ECONOMIC OPPORTUNITY

PHOTOS COURTESY GREATLIFE MEDIA



SOCIAL DILIGENCE



LIABILITY a Buzzword

What constitutes sustainable practices, though? The trouble with this consumer trend, and its widespread acceptance, is its lack of definition, says Stackhouse. “This is an opportunity for the beef industry by giving a definition and supporting that definition with positive stories.”

The millennial consumers’ buying trends can benefit from the beef industry’s sustainability research, but Stackhouse-Lawson explains it was the United Nations’ (UN’s) *Livestock’s Long Shadow* report about the beef industry’s negative environmental impact that really sparked beef sustainability research.

“Green is a trend, but sustainability is a mind-set,” she adds. “It’s not going to go away.”

Beef’s environmental impact

Jude Capper, livestock sustainability consultant, says efficiency is something the beef industry does well already. What reports like the *Livestock’s Long Shadow* fail to take into account are full life-cycle assessments.

Stackhouse-Lawson explains that these assessments are essentially an accounting system that uses complex models to quantify all inputs and outputs involved in producing beef, from birth to plate. Inputs along the entire value chain should be included, from pre-chain production of fertilizer, packaging, chemicals and others; to primary inputs like feed and water; through consumption and disposal of packaging materials by the consumer.

When anti-agriculture groups claim that the beef industry is negatively affecting the environment, Capper counters with an example likening the claim to that of fuel efficiency in cars.

A vehicle hauling 50 passengers that gets 5 miles to the gallon on a 500-mile trip ultimately gets 250 “people miles” per gallon. She compared that to a vehicle also traveling 500 miles that gets 35 miles to the gallon but carries only four passengers. It

ultimately gets 140 “people miles” per gallon.

We need to assess efficiency on an output basis, Capper asserts. “It’s not about the size of the animal, but about the pounds produced, about the output,” she says.

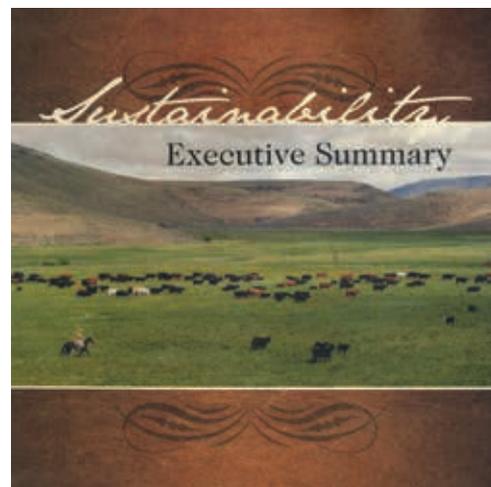
From 1977 to 2007, the beef industry improved output per beef animal, she emphasizes. In 1977, it took five animals to produce the same amount of beef as it took four animals to produce in 2007. It also took 124 fewer days to raise a market-ready animal, saving those days of land, feed, water, fertilizer and transportation use, plus compiling less manure.

To quantify those efficiency effects further, she says from 1977 to 2007, beef yield increased by 131%. Achieving the increased production required 70% of the animals, 80% of the feed, 88% of the water and 67% of the land that would have been required at 1977 production levels. Manure production decreased to 82%, as did methane, and nitrous oxide and carbon footprint levels were 88% and 84% of 1977 levels, respectively. These numbers take into account cows, heifers and bulls, not just feedlot cattle.

“Those gains were achieved by improving productivity and efficiency,” Capper notes.

Capper offers some tips on increasing efficiency, which will lower the beef industry’s environmental impact:

- Reduce time to reach target weights by increasing growth rate and feed efficiency, using beef performance technologies and optimizing diet formulation.



- Minimize losses within the system by reducing morbidity and mortality and reducing parasite infestation.
- Improve reproductive efficiency by aiming for one live calf per cow each year.
- Increase land-carrying capacity with improved pastures and better forage varieties.
- Reduce postharvest resource use and emissions, including water, paper, plastics and styrofoam.

While these may seem simple, she says, they will build upon each other. Additionally, genetics can be the best means of increasing efficiency. It is easy for consumers to get behind improved genetics.

“Improved genetics have helped this happen in the feedlot sector and could also impact the cow-calf and stocker sectors,”

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— Kim Stackhouse-Lawson

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says Capper. “Genetics can be used to reduce mature cow weight, saving feed and fuel, and also improve reproduction, longevity and calf mortality. This could allow huge gains economically and in carbon-footprint reduction. It can allow the industry to be more productive and efficient using fewer resources.”

“Consumers have no idea that the extra beef a single carcass yields as a result of using technologies such as growth implants and beta-agonists will provide seven kids with school lunches for a whole year,” states Capper. “That kind of message may be the kind that will resonate with consumers. They need to know that productivity is a key factor in improving sustainability.”



A seat at the table

In addition to Capper’s research, the beef checkoff-funded “U.S. Beef Sustainability Assessment” commenced three years ago with the goal to head off foreseen consumer

concerns. Sustainability is much more than just environmental impact. Stackhouse-Lawson was the project coordinator and worked with a large team of 25 researchers and industry advisors. The first stage of the research is completed, and the Sustainability Executive Summary is the first and largest assessment of its kind.

Additionally, the completed research has been subjected to extensive third-party and peer review. She asserts that the preharvest segment results are published in the peer-reviewed *Journal of Animal Science*. The U.S. Beef — Phase 1 Eco-efficiency Analysis, which examined the entire beef value chain, was certified by the NSF International in July 2013. NSF International is an independent global organization that writes standards, and tests and certifies products for the commercial furnishing, construction, food, water and consumer goods industries.

“This gives us a new credible amount of leadership, and a seat at the table in sustainability discussions,” Stackhouse-Lawson emphasizes.

This sustainability research project looked at the beef industry life-cycle assessment, though it was not intended to compare one beef production practice to another. Instead, Stackhouse-Lawson says, it was designed to provide a benchmark that will help all beef operators along the supply chain find individual means of improving the efficiency and sustainability of their operations.

A result of the study was a definition of beef industry sustainability. “Beef industry sustainability is meeting growing global demand by balancing environmental responsibility, economic

opportunity and social diligences throughout the supply chain,” Stackhouse-Lawson notes, adding that there are many facets to sustainability, including the profit needed to stay in business.

By looking at the entire life cycle, the research project identified the industry’s achievements to date and some areas in which the industry can improve, highlighted in Table 1. There is no one-size-fits-all solution to these areas for improvement, and Stackhouse-Lawson notes that everyone within the beef industry value chain has a role to play. Increasing efficiency will be the best opportunity for future progress.

The bigger issue is the possibility of sustainability inclusion in nutrition guidelines, but she warns that the creators of those guidelines are not all beef fans. “We need to stop picking on commodities and start addressing the real problem to sustainability — food waste,” she emphasizes.

An estimated 40% of all food produced in the United States is wasted, contributing to losses in efficiency across the entire food chain. Stackhouse-Lawson says that food waste costs the average American family approximately \$2,500 annually.

Although beef waste is about 20% of consumable product, she claims it is still a significant burden and represents a major opportunity to improve the sustainability of the beef industry. By cutting beef waste in half, the full beef chain would achieve an approximate 10% improvement in full-chain sustainability.

Future steps for sustainability research include gathering regional data and exploring the socioeconomic benefits of ongoing grazing research. Understanding the less-tangible benefits of the beef industry supply chain, like the preservation of open space and wildlife habitat, is a goal of future

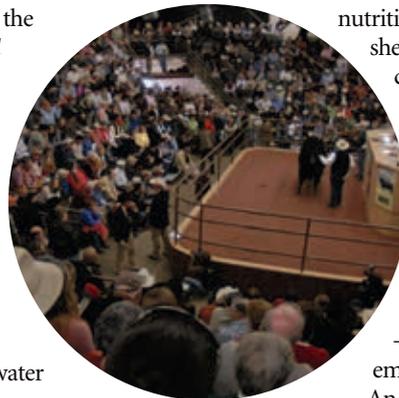
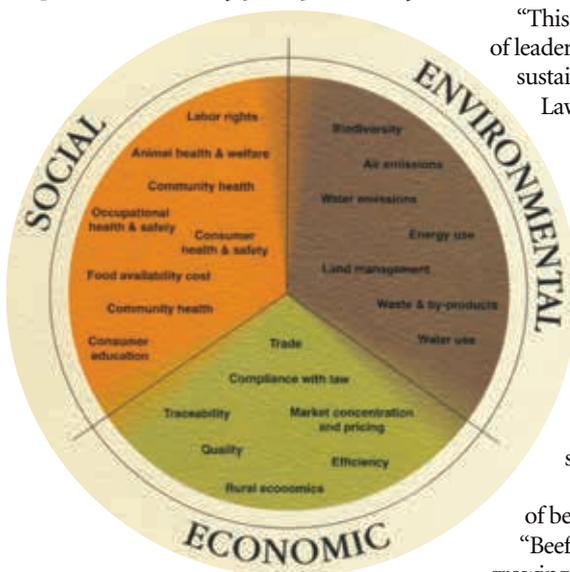


Fig. 1: Sustainability perception analysis



Source: U.S. Beef Sustainability Assessment.

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research, she says. As life-cycle assessment science improves over time, more benefits may be able to be quantified and thus more understood.

Social sustainability is not well understood yet, though it is just as critical to overall industry sustainability and will continue to be a key focus, says Stackhouse-



Lawson. “This is an area where individual efforts at the local level to reach out to consumers can make a big difference.”

The word sustainability may seem overused and misunderstood. Much to the chagrin of cattlemen, these consumer demands have potential to affect their way of life and production practices.

While the impact of sustainability is unknown with regard to McDonald’s and Walmart and other potential retailers, the beef industry does have a seat at the table with its proactive research.

For more information on the U.S. Beef Sustainability Assessment, you can view the executive summary at www.beefboard.org/news/files/FY2014/Sustainability-Executive-Summary-graph-proof-5.pdf.



Table 1: Realized and existing opportunities by sector

Realized opportunities	Existing opportunities
<p>Crop farm</p> <ul style="list-style-type: none"> • Improvements in crop yields • Increased adoption of precision farming techniques • Improved nutrient management 	<ul style="list-style-type: none"> • Continue to improve crop yields • Continued adoption of more water-efficient irrigation systems • Continue to optimize nutrient application to soil
<p>Cow-calf, stocker</p> <ul style="list-style-type: none"> • Higher-performing cattle through improved genetics and health • Improved nutrition 	<ul style="list-style-type: none"> • Continue to improve management of cattle and resources to promote improved efficiencies
<p>Feedlot</p> <ul style="list-style-type: none"> • Improved cattle performance through better management, nutrition, genetics, health and technology • Improved manure management 	<ul style="list-style-type: none"> • Optimize the use of distillers’ grains in diets • Continue to improve efficiencies • Continue to optimize manure-management techniques to reduce fertilizer inputs
<p>Packer</p> <ul style="list-style-type: none"> • Biogas recovery • Closed-loop water-cooling systems • Waste-water recovery 	<ul style="list-style-type: none"> • Continue to optimize biogas recovery systems, closed-loop water-cooling systems and waste-water recovery systems in plants
<p>Case-ready</p> <ul style="list-style-type: none"> • Right-size packaging • Plant optimization 	<ul style="list-style-type: none"> • Explore new packing alternatives that further reduce inputs and are accepted by the consumer
<p>Retail</p> <ul style="list-style-type: none"> • No improvement in current data 	<ul style="list-style-type: none"> • Provide data to the study • Reduce greenhouse-gas leakage from refrigeration units
<p>Consumer</p>	<ul style="list-style-type: none"> • Reduce food waste

Source: U.S. Beef Sustainability Assessment Executive Summary, 2014.