



Beef Production is Earth's Good Steward

Beef producers, themselves, are charged with helping advocates like Jude Capper spread the positive message that responsible beef production is, indeed, a good steward of Earth's resources.

By Kim Holt
Photo courtesy Brian Charles Clark, WSU CAHNRS Marketing and News

***Editor's Note:** Charolais and Charolais-influenced producers understand the relationship of economic efficiencies in producing more pounds in every calf crop and the reality of sustaining their own operations. The influence of Continental genetics in the last half of the 20th Century, scientific and technological advancements, and improved management tools enable beef producers to produce more, higher quality beef and use fewer resources.*

All foods have an environmental impact. But, as Jude Capper has shared with audiences from coast to coast and across the oceans, the U.S. beef industry has a great story to tell that proves it is, indeed, sustainable and environmentally friendly.

Capper, a livestock sustainability consultant who resides in Bozeman, Mont., says her professional goal is to communicate the importance of livestock industry sustainability, and the factors affecting it, in order to enhance the knowledge and understanding of stakeholders within food production.

As defined by Merriam-Webster

■ **Sustainability:** of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged <sustainable techniques> <sustainable agriculture>

■ **Carbon Footprint:** the amount of greenhouse gases and specifically carbon dioxide emitted by something (as a person's activities or a product's manufacture and transport) during a given period

On a daily basis she defends beef, sharing facts, figures and talking points, like those presented here. It's her hope that others will use them to help tell their own positive story of beef production from the grass roots.

According to Capper, sustainable food production is "the efficient use of natural resources; caring for land, air, water and wildlife; and producing safe, affordable food to nourish the human population."

Here in the U.S., we are producing more beef for our world while using fewer resources. While this probably comes as little surprise to ranchers, the industry, and ranchers themselves, are charged with making sure consumers know just how eco-friendly our practices are.

Capper admits that the carbon footprint is something "... we could argue about for hours and hours. Is it true, is it not, is it a fact? The fact is that it is an issue for the consumer, the retailer, the processor and for government. It isn't something that we, as an industry, can ignore and put to the side."

She says, "Every single beef production system can be sustainable," no matter its size, the breed or if it's organic, conventional or natural, provided three factors are in place: economic viability, environmental responsibility and social acceptability.

Economic viability will and has always been the most important factor, she says, but now environment has come into play.

"As an industry, we know that we're environmentally responsible but the public always doesn't



Find Jude Capper's blog at Bovidiva.com, follow her on Twitter @Bovidiva, or she welcomes questions at jude.capper@montana.edu.

see it our way. They have this image of big, bad modern agriculture that's killing the planet," Capper says.

These days, "We have people like Oprah, Dr. Oz and Michael Pollan very willing to tell the whole world what agriculture does and why we do it wrong." Not to mention there is the reach and audience captured by social media. As Capper points out, agriculture has to answer to many more questions from many more people than it did 20 or 30 years ago.

However, this shouldn't discourage but encourage, she says, because "As an industry, we have a fabulous success story to tell." It's one of turning land unsuitable for cultivation of human crops into beef and beef by-products.

"It is a huge success story for our industry, and one that really needs publicized more," Capper assures.

"...I think the most important thing to understand from a carbon, land and water point of view is that grain-fed actually uses far less land, far less water, and emits far fewer greenhouse gases than grass-fed beef."

Conventional is Sustainable

Capper points out that sustainable is often thought of as only being organic, grass-fed, locally produced or a niche-type market.

However, she advocates, "Conventional beef is sustainable," and it will continue to be, provided we still have access to the practices, technologies and management tools that have allowed efficiencies, she says.

In July 2011 Capper published in the *Journal of Animal Science*, "The Environmental Impact of Beef Production in the United States: 1977 Compared with 2007", prepared at the request of the National Cattlemen's Beef Association.

"The aim of that was really to show how improved efficiency and productivity over that time have had a positive effect on land and water use, carbon footprint and also energies."

"Compared to 1977, for every pound of beef in 2007, we needed 30 percent fewer animals, 33 percent less land, 14 percent less water, 19 percent less feed and 9 percent fewer fossil fuels per pound of beef. So what that all adds up to is a 16 percent decrease in the total carbon footprint per pound beef used in 2007 versus 1977."

Capper believes that consumer choices are very important, and all should have the option to buy the type of beef they prefer: corn- or grass-fed, local or organic.

"Those are all totally acceptable, viable systems. I think the most important thing to understand from a carbon, land and water point of view is that grain-fed actually uses far less land, far less water, and emits far fewer greenhouse gases than grass-fed beef."

She continues, "If we have our animals fed corn, they grow faster, are harvested at higher weights, and those two things combine to mean that, in total, we need far fewer animals to make a set amount of beef, and those animals are on the planet in total for fewer days."

Global Challenges and Opportunities

Our planet is poised to see great growth as we move toward 2050, with total global population forecasted to grow from 7 billion to 9.5 billion people. A widespread increase in milk, meat and eggs is expected, as people in countries like China and India increase affluence.

The Food and Agriculture Organization of the United Nations (FAO) suggests that food production will have to increase by 70 percent to fulfill the nutritional needs associated with the total population increase, and that includes livestock production.

Reflecting on this challenge, Capper points out, "Not only do we need more food, but proportionately we have less land to grow it." She says that is where we face the challenge of explaining efficiency and technology to the consumer.

"Food and technology together are frightening words for consumers. We have to help people understand we have the safest food supply in the world, and we will continue to do so if we can keep our efficiency up."

She says the anti-ag/activist groups pose another major challenge to this conversation. "They know the images that will make people stop and look." While their banners may sound scientific to the average consumer, their facts are purposely distorted toward their agenda.

Misinformed Meatless Mondays

"Our goal is to reduce meat consumption by 15 percent for our personal health and the health of the planet," reads the Meatless Monday website.

Among other inaccuracies about livestock production resources, it says that the "Water needs of livestock are tremendous, far above those of vegetables or grains. An estimated 1,800 to 2,500 gallons of water go into a single pound of beef. Soy tofu produced in California requires 220 gallons of water per pound."

Jude Capper points out that it takes 441 gallons of water to produce one pound of beef. If everybody in the U.S. went meatless each Monday for an entire year, the national carbon footprint would decrease by less than one-third of one percent.

Calving Rate Holds a Key

Jude Capper says that sustainability is about suiting your system to the animal, feed, land and labor resources available. That use of good breeding, feeding and management practices makes the best use of these resources, with an emphasis on reproduction.

A rancher's biggest influence on environmental sustainability may be through calving rate, she states. Further explained, the higher the rate, the greater the efficiency, which also translates into fewer nonproductive cows utilizing land and water resources.

For example, at a 90 percent calving rate in the U.S., it takes 6.7 percent more cattle, 8.1 percent more land and 5.2 percent more water to produce a pound of beef. Compare this to Brazil's 60 percent calving rate which takes 44 percent more cattle, 53 percent more land and 34 percent more water to produce one pound of beef.

Capper points out that 1 in 7 people in our world don't have enough food to eat. But that "when we make the best use of resources, we can feed a hungry world sustainably."

The truth, says Capper, is that animal agriculture contributes a small proportion of the U.S. carbon footprint. According to 2012 EPA (Environmental Protection Agency) statistics, meat production accounts for 2.1 percent of total greenhouse gas emissions.

But it's not just here that livestock are threatened by groups like these. Globally, animal agriculture is under threat, and cattle are being blamed for global warming to reduced water usage. Capper predicts that land and water issues are upcoming targets for anti-ag activists, especially as urban expands even more into rural.

Furthermore, she questions: If we have fewer cattle, where will we source the products that by-products are responsible for? "What's the energy cost of that, the carbon footprint, the water usage? The cattle industry is the ultimate recycling industry."

That is our challenge, as an industry and individuals, that we need to help consumers understand.

She points out that polling shows consumers trust family, friends, farmers and ranchers, "which means we can get messages to our

friends and families in a trustworthy manner."

Capper, for example, has an active social media presence and spends a considerable amount of time debunking some of the more commonly heard myths relating to resource use and the environmental impact of livestock production.

She challenges industry audiences to get facts and figures together, like those given here, and then reach out and counter opponents. Capper encourages the use of social media because of its potential reach. For example, the average Facebook person has 200 "friends".

It offers a "huge" potential cross section of people who will see positive messages about beef, she says, all while helping to spread the proactive message that responsible beef production is, indeed, a good steward of Earth's resources.

Jude Capper presented at the 2013 Idaho Cattle Association Convention. This group originally featured this content in its winter and spring Line Rider publications.

Important Facts from Jude Capper's Research

In 1977...

it took five animals to produce the same amount of beef as four animals in 2007.

Capper's research shows that the beef industry has become "far more efficient" in the 30 year time frame she compared, a savings of 1,105 animal days. Furthermore, beef yield per animal increased by 170 lbs.

Environmental Impact of U.S. Beef Production has been Reduced by Improved Productivity

Compared to 1977, for every pound of beef in 2007, we needed 30 percent fewer animals, 33 percent less land, 14 percent less water, 19 percent less feed and 9 percent fewer fossil fuels per pound of beef. This adds up to a 16 percent decrease in the total carbon footprint per pound of beef used in 2007 versus 1977.

Converting to Grass-Fed Beef Considerably Increases Animal Numbers

Capper researched grass-

fed to figure out if this system is truly better for the planet, as often professed. What she found is this production method actually has a greater environmental impact, because it considerably increased animal numbers and days on feed, thus, needing additional resources in order to produce 26.1 billion pounds of beef, the equivalent of our industry's annual production.

If all U.S. beef was grass-fed, it would increase land use by 131 million acres, or 75 percent the land area of Texas; water use by 468 billion gallons, equivalent to the annual use of 53 million U.S. households; and increase carbon emissions by 134 million ton, which equates to annually adding just over 26 million cars to the road.

Technology Use Reduces Days from Birth to Slaughter and Improves Weight at Finishing

Technologies and efficiencies to feeding and additional weight to our animals. Capper questions, "Can we really afford to lose the sustainability

advantages that productivity-enhancing tools provide?"

Without either of the technologies provided by beta-agonists or implants, it would take an extra 15 million head of cattle to maintain the annual U.S. beef production of 26.1 billion pounds of beef.

"If we need more cattle to maintain beef supply, we use more resources and have a greater carbon footprint," she says. Put into perspective, if both technologies were removed, it would take: 1) more water, equivalent to supplying 7.3 million U.S. households annually; 2) more land, equivalent to the area of Louisiana; and 3) more fossil fuels, equivalent to heating 98,000 U.S. households for a year.

Furthermore, growth-enhancing technologies reduce beef's environmental impact by 10.7 percent. Resources saved per 800 lb. carcass include 4.2 tons of feed, 1.0 acre of land and 22,722 gallons of water.

Technology also has a positive impact on social sustainability, and Capper brings the importance of technologies

into perspective for consumers. Extra beef from growth-enhancing technologies on a single carcass will supply seven children with school lunches for a whole year. Extra beef as a result of effective parasite control in a 35 head herd supplies 19 families with their annual demand for beef.

Hormones in Food are Undesirable, Yet Life-style-Related Hormones are Acceptable

Capper points out that there are hormones in all foods, including plants. "The numbers need to be put into context for people," she says.

One 8 ounce steak from an implanted animal contains 5.1 nanograms (ng) of estrogen. One ng is roughly one blade of grass on a football field, Capper compares. In comparison, women would have to eat 3,000 lbs. of beef daily to get the same amount of estrogen as found in one birth control pill. Furthermore, one ounce of cabbage contains 1,061 times more estrogen than one ounce of implanted beef.