

Upping the Ante

How cattle serve as environmental stewards by “upcycling” to feed the world.

by *Rebecca Bland*



The beef industry has been under fire recently for its alleged harmful effects on climate and health. In January 2019, a report published in the British medical journal, *The Lancet*, claimed a radical change in diet and food production is needed to “avoid potentially catastrophic damage to the planet.” The report recommends a 50 percent decrease in red meat and sugar consumption while doubling the intake of nuts, fruits and vegetables. In addition, nonmeat initiatives, such as Meatless Monday, continue to make headway.

Left unaddressed, these types of reports and initiatives will cause the industry to face a backlash of misconceptions regarding the sustainability of beef production. Beef industry leaders and cattle producers

are taking a new, positive approach in discussing the benefits of beef production — an open discussion of upcycling.

What is upcycling?

The term “upcycling” refers to converting a little-to-no-value item to a higher-value product.

As ruminants, cattle act as natural upcyclers — they consume low-value, human-inedible plants and regenerate them into a high-quality protein that provides nutrition for people across the globe. The forage-based diet of cattle sets them apart from pigs, chickens and other nonruminants because other animals cannot convert forage to protein as cattle can.

As the structural component of plants, cellulose is the most abundant

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carbohydrate on Earth. However, humans cannot digest cellulose, deeming it of no nutritional value when eaten. Due to the unique enzymes in their rumens, cattle can break down cellulose and convert it from low-value forage into a high-quality protein source to supply humans with dietary essential amino acids that serve as the building blocks of protein.

“That’s the beauty of cattle,” says Sara Place, Ph.D., senior director of sustainable beef production research, National Cattlemen’s Beef Association. “They have that symbiotic relationship with all those microbes that live in their rumens, so they’re able to transform all that cellulose and all that fiber that are human inedibles into things that are usable.”

Upcycling in the cattle industry also occurs through cattle’s consumption of inedible byproducts or plant leftovers from processing crops. Byproducts, such as soy hulls, carrot tops, wheat middlings and citrus pulp, are viable sources of nutrition for ruminants. Bryan Blinson, executive director of the North Carolina Cattlemen’s Association, feeds whole cottonseed byproduct to Herefords on his farm in Buies Creek, N.C.

“Feeding byproducts to cattle is an especially good choice since byproducts are something that might otherwise go to the landfill,” Blinson explains. “We found that whole cottonseed has been widely adapted as a really excellent feed, and cotton ginning and milling byproducts have helped to fill in for hay in some situations because of the nutritional value – and the fact that the cattle really like it.”

Making use of the land

The Lancet report warns consumers that current food production is affecting climate change, biodiversity and sustainability in water and land use. With as many as 800 million acres available as rangeland in the U.S., some argue land is not being put to optimal use.

However, not all land is suitable as cropland – some terrain is too rocky, steep or arid to support cultivated crops and, if cultivated, is highly erodible. Using ruminants for grazing, such as cattle, goats and sheep, allows landowners to raise human-edible food on these marginal lands. Additionally, wildlife and cattle coexist, creating an environment for both food production and natural habitat.

Another multipurpose use involves cattle grazing on acres containing remnants from last



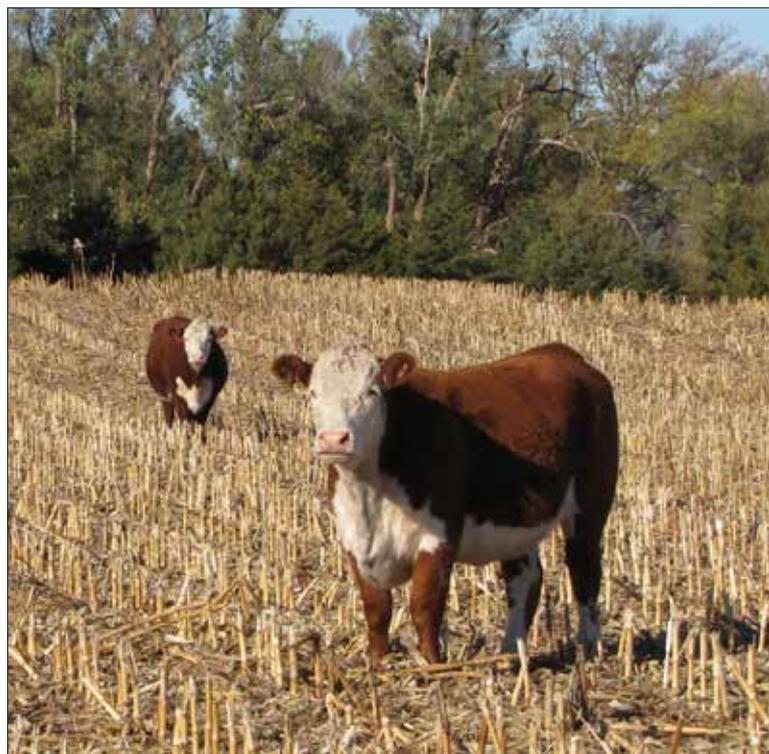
Cattle allow farmers and ranchers to gain maximum value out of land unsuitable for crops.

season’s crop, such as postharvest corn stalks and leaves. On such acreage, cattle improve the soil quality by clearing crop stubble and depositing organic matter back into the ground.

Blinson uses a cover crop following tobacco on a neighboring farm, allowing cattle to graze through the cover crop approximately four times.

“It works really well because it lets that land be used productively multiple times a year rather than just once,” he says. “The cover crop helps hold the topsoil in place to avoid erosion

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Cattle grazing last year’s crop is a valuable way to improve farmland by clearing past remnants and putting nutrients back into the soil.

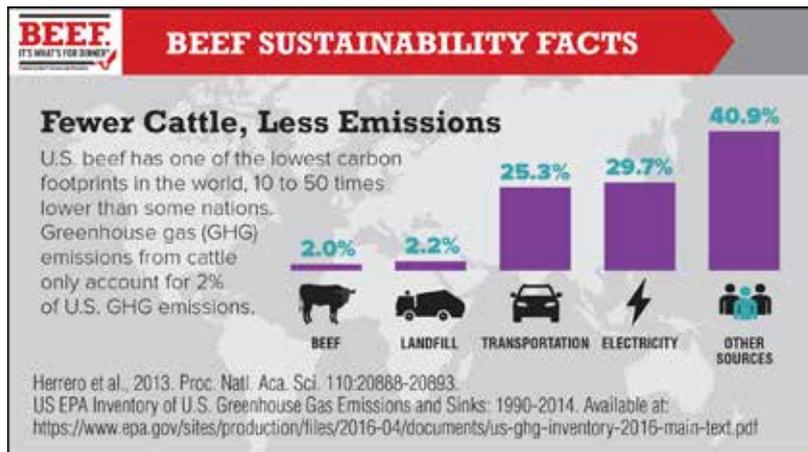
and helps with weed control. The cattle also help fertilize the land, adding nutrients back into the soil to save on fertilizer.”

As he points out, “To have good cattle, you have to have good grass and to have good grass, you have to have good soil.”

Like many cattle producers, Blinson takes grazing one step further by integrating strategic grazing on his operation. He knows the forages available at different times of year and strategically moves the cattle from one fenced area to another, helping the cattle use the best forages and to distribute fertilizer as nutrients for the soil. He uses new fencing technologies and temporary wire to divide the pastures and to keep cattle grazing more days of the year.

“By using strategic grazing, we can optimize the acreage we have, optimize the forage we have, and the cattle do better,” Blinson explains. “The ability to use those pastures more days of the year to save money on feed and all the while improving the soil, that’s the sweet spot we’re striving for.”

Leaving the land better than how they found it is the long-term goal for most cattle producers, particularly those with multigenerational operations. Kim Stackhouse, Ph.D., chair of the U.S. Roundtable for Sustainable Beef and director of sustainability at



JBS USA, applauds the efforts of cattle producers to employ new ways to better the land.

“The healthier the landscape is, be it through the implementation of a grazing management plan or equivalent plan, really allows cattle to do the best job they can in that upcycling process,” Stackhouse says. “Continuing to be good stewards and always finding good ways to innovate and improve is critical to the overall conversation around beef sustainability.”

“We want to leave the soil better when we finish than when we started. One, it’s the right thing to do. And two, it’s an economic factor for us. If we can save on inputs and make the animals do better, that’s better for the bottom line.”

— Bryan Blinson

Countering misconceptions

A huge misconception concerning beef production is the amount of methane gas cattle release. Although older reports on emission levels have since been disproved, the fact remains cattle do produce methane gas because of the enzymes at play in the rumen — and the amount of methane released increases as the amount of forage



PHOTOS PROVIDED BY BRYAN BLINSON

By strategically moving cattle to different pastures and using temporary fencing, cattle producers can utilize their land most appropriately for their cow herd and farming enterprise.

consumed increases. The only way for cattle to reduce the amount of methane gas they produce is to eat more human-edible food. Yet, feeding human-edible food to cattle runs counter to the benefit of upcycling.

“If we’re going to talk about upcycling, it’s about creating waste-to-worth loops and taking anything that would be waste and making it a better thing rather than focusing on just greenhouse gas emissions,” Place notes. “We need to think about the bigger picture and how all these pieces fit together. That’s what’s really important.”

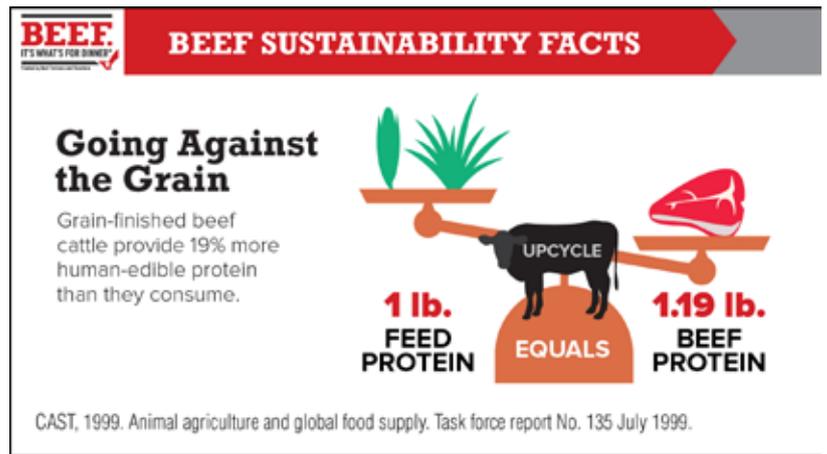
As the global population reaches 7.7 billion people and counting, producing more food with less resources is a necessity in feeding the world. Though the majority of food cattle consume is forage and plant leftovers, grain makes up approximately 11 percent of grain-fed cattle’s life cycle feed intake. As a result, some people question the sustainability of feeding grain to cattle versus feeding grain directly to humans.

But the grains fed to cattle, mostly corn in the U.S., are high in calories and low in protein. According to Place, cattle generate more high-quality protein by using the corn supply than if humans ate the corn directly. A report from the Council for Agricultural Science and Technology confirms U.S. grain-finished beef cattle contribute 19 percent more human-edible protein than the cattle consume.

“Cattle are making more protein for humanity than would exist without them,” Place says. “So they’re not really stealing food from our plates, they’re adding to our collective dinner table.”

The U.S. Roundtable for Sustainable Beef plays a significant role in advancing, supporting and communicating improvements about the sustainability of U.S. beef production. One of the organization’s many functions involves providing a forum for open discussion, information exchange and program development.

“We continue to be extremely active, working to help identify ways for the entire beef value chain to improve and also help more individuals understand the complexities of beef production,” Stackhouse says. “By having a voice that speaks on behalf of the entire beef value chain, inclusive of civil society and allied industry partners, producers, packers and retailers, we



can reach more people and help them understand how beef is sustainable.”

Stepping up

Recognizing cattle as upcyclers is not a new concept — cattle have been upcycling since they were domesticated more than 10,000 years ago. The current discussion about upcycling is a fresh way to think about how cattle sustainably contribute to the world food supply that resonates with the nonagricultural public.

The beef industry encourages cattle producers to join in the upcycling conversation to inform their communities, friends, consumers and the media about the positive role cattle play in feeding an increasing world population.

“The upcycling message helps open doors to get people more informed about the benefits of beef and thinking about the life cycle of cattle,” Place says. “We just need to let people know how our cattle are raised and what they’re eating, which is where the upcycling story really comes into play.

“I think it’s important that our producers emphasize that if there’s one group of people thinking about taking care of the land, being good community members, sticking it out for the long term and having a long-term vision, it’s people in agriculture,” she adds. “It’s cattle producers.” **HW**

