



Tell Beef's Sustainability Story

Consumers want to know.

by **Wes Ishmael**

Just a few years ago, the notion of discussing environmental sustainability, beyond long-lived stewardship, would have seemed an odd topic for the annual Beef Improvement Federation (BIF) Research Symposium and Convention. For obvious reasons, though, it permeated discussions when some of the nation's most progressive seedstock and commercial producers, leading geneticists and scientific minds gathered for the 2022 event.

"A large portion of the public has been convinced that the cause of climate change are ruminants," explained Ruaraidh Petre, executive director of the Global Roundtable for Sustainable Beef (GRSB). "We need to give them the data that shows ruminant agriculture is one of the few ways of providing food that can actually sequester more carbon and be more carbon neutral than any other form of agriculture. The facts are on our side, but we need to get these facts across. We need data; we need transparency."

While the environmental benefits of ruminant production are universal, Clay Mathis, director of the King Ranch Institute for Ranch Management, pointed out they shine brightest in the United States.



Ruaraidh Petre

"In North America we have a very good relative emissions intensity, and it's a function of being the most efficient

production system in the world. We have an advantage in the United States."

Mathis explained gross greenhouse gas (GHG) emissions is a factor of cow numbers, while emissions intensity gets at emissions relative to production, reducing the impact per unit of product sold.

"This industry, before there was ever talk about sustainability, was already investing heavily in improvement to performance and efficiency. That's part of why our emissions density is low," Mathis said.

But facts matter little if the beef industry fails to effectively convey them to the part of society mentioned at the outset.

Mathis referred to a scattergram describing economic viability in beef production.

"Part of it was cost of production. Part of it was revenue, the price. But the biggest driver of price received was consumer



Clay Mathis

trust, and consumer trust is a function of social acceptance of what we do," he explained. "I don't think we can get

around that. As an industry, I think we have to think boldly forward about how we move the needle at a threshold level to be able to change so that we are getting our story across."

Telling the story

"Nature-positive production is a term we're going to continue to hear more in the future. We need to be able to know what that means. Not only do we need to know what it means, we need to be able to articulate it well to all who will listen so we can demonstrate the great things we do in this industry," Mathis said. "It's not in our nature to communicate the great things that we do. That's not who we are as a ranching or agricultural culture, but we've got to figure it out."

He explained all facets of the U.S. beef production system can impact climate and the industry's sustainability, such as grazing management, animal welfare and genetics.

For instance, Mathis suggested there will likely be more discussion about the genetics associated with methane production and other metrics related to the carbon footprint of cattle.

One recent example is the research project between the American Hereford Association (AHA) and Colorado State

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— **Decky Spiller**
Silver Spur LLC

University (CSU) to characterize genetics associated with production efficiency, which plays a key role in environmental and economic sustainability.



2022 BIF Recap

The AHA-CSU project leverages decades of AHA research and data collected by AHA members. It includes individual feed intake records collected through the National Reference Sire Program (NRSP) since 2010. AHA began whole-herd reporting in 2001 to secure complete calf crop information and eliminate reporting bias.

Specifically, AHA-CSU cooperative research will enhance understanding of the genetic differences in seedstock relative to enteric methane production and nitrogen excretion. The research includes identifying selection tools that can help reduce beef's carbon and environmental footprint.

Methane emission, as a genetic trait in cattle, appears to be moderately heritable with genetic correlations (modest to strong) to economically relevant production traits, such as measures of growth, dry matter intake and various estimates of feed efficiency.

Another example is the Sustainable Beef Network, comprised by GRSB and the network of national roundtables spanning 24 countries, all committed to delivering the message about beefs' role in a thriving and sustainable food system.

"These groups came together for the success of the beef industry. I think we need to do everything we can as an industry to empower those working for the industry," Mathis said.

The example consumers care most about is the story individual producers share about what they do, how and why. Producers like those who were part of a BIF panel regarding Strategies for Sustainability at the Ranch. It included representatives of Cattle for AgReserves, Padlock Ranch and Silver Spur LLC. Each entity owns and manages multiple ranches.

In moderating the panel, Mathis shared their individual thoughtfulness in interacting with the public about what they're doing with their natural resources and how they're taking care of their animals.

"If we're going to be sustainable, then we have to be active participants in the marketing of our product and the face of the product; the public has to know who we are," said Decky Spiller of Silver Spur LLC. "We can't just, so to speak, stand behind the cattleguard. You're going to have to be an active participant in this industry." **HW**

See Mathis' insights at youtube.com/watch?v=6fxw51e8At0.

See the Strategies for Sustainability at the Ranch Producer Panel at youtube.com/watch?v=My5YP5vjoJU.

Editor's note: Presentations from these and other BIF speakers are available at BIFSymposium.com.

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What They're Talking About

Information here is adapted from proceedings and synopses from the Beef Improvement Federation (BIF) 2022 Research Symposium and Convention in Las Cruces, N.M., in June. You can find proceedings and other presentations at BIFSymposium.com.

U.S. Genetics are the Gold Standard

"U.S. genetics are a valued-added product because our industry has done more research in the areas of EPDs, genomics and efficiency of producing more food with less animals, and the world looks at the USA as the supermarket of the world," says Tony Clayton, Clayton Agri-Marketing Inc. president, in the BIF proceedings. "The power of the pedigree is what adds value to the years of work breeders, breed associations and universities have done together to identify breeding values for specific traits and genomics international buyers want to acquire."



Tony Clayton

The years producers and breed associations in this country invested in research, performance testing and refining genetic selection tools is one reason the world views U.S. producers as a genetic leader.

Paradoxically, Clayton explains, many of the countries' leading global population growth lack the background to understand the pedigree information. So, it will take plenty of education about breeding programs, identifying traits most valuable in their unique production systems and relative value.

"I explain to a lot of our clients that buying genetics with high genomics and EPDs is like buying a car. If you want the sunroof, it costs money. If you want the aluminum wheels, they cost money. We have a lot of misinformation out there, and we work with clients to educate them on our genetic systems," Clayton says.

Currently, Clayton says global export demand is driven by mainly population growth and increasing consumer demand for agricultural products, especially protein, meat and milk. In turn, he explains this demand broadens the opportunity for U.S. genetics.

Genetics include live cattle exports, of course, including feeder cattle. For instance, as China imports more cattle from countries like Australia, Brazil and Chile, Clayton says it will leave a supply gap. He foresees growing demand for U.S. feeder cattle exports.

"The livestock export industry is a billion-dollar industry," Clayton notes in the BIF proceedings. "Our industry has a financial impact not only for the breeder, but all involved in the export chain such as veterinarians, truckers, testing labs, quarantine facilities, feed suppliers, insurance companies and banks, just to mention a few. The export of animal genetics helps feed a growing population and hopefully helping to keep the peace around the world by feeding hungry people."

To watch Clayton's presentation, visit youtu.be/qRKhURAYfoM.

Matching Genes to Environment

Cattle producers may think of it in different terms, but the "Gene X Environment interaction" (G X E) means there are animals that perform better in some environments than others.

Milt Thomas, professor and John E. Rouse chair of beef cattle breeding and genetics at Colorado State University, offered insights on behalf of the Beef Cattle Breeding Group of the Agricultural Experiment Stations of the Western States of the U.S.

Thomas used a historic study to illustrate G X E.

USDA Agriculture Research Service and experiment stations in Montana and Florida conducted the study. Hereford herds were maintained at each location, and some cattle at each location were moved to the other location. Cattle from Montana performed best in Montana, and the cattle from Florida performed best in Florida.

It's what Thomas likens to home-court advantage for a basketball team.

"However, G x E is more than just the E and moving cattle to the other environment," Thomas explains in the BIF proceedings. "As the ability to do genomic analysis was gained, scientific efforts revealed that there are concentrations of alleles in specific environments. Alleles are alternative forms of genes, and recent research revealed that there are frequencies of alleles unique to environment(s), which is a result of breeders selecting cattle that are most suitable to that environment. Because of this knowledge, it encourages the scientific and breed association community to continue to advance research so that environmental adaptability can be determined early in the life of cattle.

"To most, discussion of G x E is much more about fitting the most appropriate cattle to the resources of a production system. Therefore, the definition of G x E can be much more than about environmental adaptability; it can also be about the various types of production systems that can exist within an environment. Examples of such differences could be a cow-calf production system versus a vertically coordinated system that markets beef based through a direct market."

In sum, Thomas says it's important to understand G x E interaction to select cattle that are adapted and fit specific environments and production systems. Besides the impact on production efficiency, he expects increased discussion about how G x E to include understanding its impacts on metrics of environmental sustainability such as cattle's carbon footprint.

"The ability to detect G x E has increased with genomic approaches and information from spatial databases providing opportunity to study and develop genetic improvement tools for adaptability," Thomas says. **HW**

To watch Clayton's presentation, visit youtube.com/watch?v=6vhjy396h54.



Milt Thomas