

How Carbon is Shaping U.S. Beef Production

Topics to keep in mind.

The topic of carbon is everywhere, and many would say it's talked about too much. But it is no longer just a scientific buzzword; it's reshaping agriculture and influencing policy. From soil health to energy production, carbon is at the center. Still, most of us are unsure what aspects of the carbon conversation pertain to our farms and ranches. I pulled together a list of seven carbon-related topics.

Carbon sequestration in soils –

Farmers are adopting practices like no-till, cover cropping and rotational grazing to store carbon in the soil.

Methane reduction strategies –

Cattle producers are experimenting with feed additives, genetic selection and manure management techniques to curb methane emissions.

Carbon credits and markets –

Voluntary carbon markets allow producers to generate and sell carbon credits, creating a new revenue stream, albeit most would agree it is not a high-paying or even break-even strategy at this point.

Regenerative agriculture –

This holistic approach integrating carbon capture methods, biodiversity and soil conservation is becoming more mainstream across the U.S.

Enteric fermentation research –

Scientists are testing feed alternatives, such as seaweed and essential oils, to reduce methane emissions from digestion. Many producers feel this approach may hold the most practical promise, though changing diets is costly and these alternatives are unproven at this point.

Carbon-neutral and net-zero goals –

While recent political developments have seen many companies pull back on climate pledges, major meat and dairy processors are still engaged in evaluating their goals to reach carbon neutrality, which means ongoing expectations of beef producers to adapt.

Precision agriculture –

Precision ag tech is nothing new to most of us, but with the recent addition of artificial intelligence, things like drones or soil sensors will emerge with even bigger sustainability impacts.

What's in it for me?

Carbon isn't just a regulatory challenge; there are potential economic opportunities for beef producers when combined with a sustainability plan that makes sense for an operation's unique goals. With the industry moving toward sustainability benchmarks and our own American Hereford Association (AHA) becoming more involved in sustainability research and exploration (see AHA Sustainability Research), for some Hereford breeders, taking action now will make sense and be an important part of business plans going forward.

Let's continue the conversation. **HW**

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AHA Sustainability Research

The American Hereford Association (AHA) launched a landmark collaborative research project with Colorado State University and AgNext in 2022 to enhance the understanding of the genetic differences in seedstock relative to enteric methane production and nitrogen excretion. Both contribute to greenhouse gas (GHG) emissions and the carbon footprint of cattle. Documenting the relationship between traits associated with efficiency — Hereford advantages — and GHG emissions is a logical next step for breed research.

This project leverages decades of AHA research and member data, including individual feed intake records collected through the National Reference Sire Program (NRSP) since 2010. Unbiased reporting associated with AHA's Whole Herd Total Performance Records (TPR™) — established in 2001 — adds prediction accuracy.

Research results thus far confirm that sire differences account for a significant amount of variation when it comes to individual cattle methane emissions and nitrogen excretion. Based on early assessment, these traits are moderately heritable, similar to weaning weight. This suggests individual cattle methane emission and nitrogen excretion can be reduced through genetic selection.

AHA will present more comprehensive to-date research results at the AHA Annual Meeting and Conference in October. **HW**