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Gas Powered Ruminants

The power of the ruminant animal is truly an amazing design. No other creature can convert the solar energy of photosynthesis found in plants into a nutrient dense food source, simply by eating those plants. Obviously, it isn't exactly that simple, as rumination and digestion is a complex process happening within the animal. It should come as no surprise that ruminant animals produce and expel gas in this process, methane in particular is creating attention in lots of circles around the world.

Why the emphasis on methane? Methane is a powerful greenhouse gas that impacts our climate and is one reason there are groups that do not like beef and dairy production. Methane is a short-lived gas, meaning it lasts and warms the atmosphere for about a decade before being broken down into carbon dioxide and water vapor. This carbon is then available to be utilized by plants for photosynthesis to grow and produce oxygen, as part of the stockpile of CO2 in the atmosphere.

Promising research shows that it's possible to reduce methane production with minimal impact on animal health and production. This is being accomplished in two main ways: 1) changing the diets fed to ruminants and 2) through genetic selection for reduced methane production in the rumen. Feeding higher starch, grain-based diets, pound for pound produces less methane than forage-based diets. Additionally, various feed additives have been found to reduce methane. However, most ruminants worldwide do not consume a controlled diet and are primarily forage grazers. While work in nutrition is positive and continues, the genetic side of the equation is important as well.

Research on methane is happening across the globe. There has been lots of buzz in all media channels about this topic from inside and outside of agriculture production, which makes it difficult to sort out at times. Methane was well covered at the 2025 Beef Improvement Federation Symposium by many people much smarter than me! Work done in New Zealand on sheep and cattle was highlighted by Dr. Jason Archer, here's the quick summary.

His key message was using genetic selection can 1) improve production efficiency and simultaneously lower methane intensity, using currently available tools and 2) reduce methane yield. Both contribute towards sustainability, but different people want different things! Breeding to reduce methane is one of the best long-term strategies, but measuring both methane and feed intake is important. The challenge is how much animal performance can be sacrificed to reduce methane and is the industry ready to collectively work together to make meaningful impact?

Research shows that even with low to moderate heritability, breeding and selecting animals with lower methane production can have a net positive effect. The work in New Zealand measured actual gas emissions of sheep and cattle in research collection chambers. Genetic markers in genomic testing are being worked on as well. To see this full presentation and others related to the topic, visit: https://beefimprovement.org and look up the 2025 Symposium Presentation archives.

This is an ongoing topic that is important for everyone to stay informed about. While it is true that greenhouse gas emissions are produced by many different sources and it is not fair to point the finger at belching cows alone, it is also true that ruminants do belch methane. I'd encourage everyone to do their homework and stay informed. You don't have to travel to New Zealand to find research being done. Kansas State University has ongoing projects, including work with cattle: https://ksufoundation.org/impact/global-impact/less-gas-more-money/