

Environment: Little feet, big feat

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Study shrinks dairy's carbon footprint

Second study finds Jersey footprint is smaller when it comes to cheddar cheese production.

Greenhouse gas (GHG) emissions associated with a gallon of milk produced, processed and marketed in the United States are approximately 2% of U.S. total emissions – far less than earlier figures reported about the global livestock industry incorrectly attributed to U.S. dairy.

The Innovation Center for U.S. Dairy commissioned the Applied Sustainability Center at the University of Arkansas to conduct a GHG life-cycle assessment (LCA) of fluid milk. Dr. Greg Thoma, professor of chemical engineering at the University of Arkansas and lead investigator of the study, presented the findings at the International Food LCA Conference in Italy this fall.

Researchers followed the journey of a gallon of milk from the beginning of the life cycle, when crops are grown to feed cows; milk is produced and delivered to processors; through processing, packaging and distribution; all the way to the purchase and disposal of the gallon of milk by the consumer. The study used data from more than 500 dairy farms and 50 dairy processors, as well as from more than 210,000 round trips from farm to processing plant.

The study's completion is a significant step in a comprehensive, science-based approach to measure and improve dairy's environmental footprint. The identifies opportunities for efficiency and innovation across the fluid milk supply chain, including feed efficiency, manure management, energy management and fuel efficiency.

"The entire dairy industry – dairy producers, processors, manufacturers and brands – is working together to build on its long history of sustainability," said Tom Gallagher, CEO of the Innovation Center for U.S. Dairy and Dairy Management Inc.[™], which manages the national dairy checkoff.

Management practices effective

A key finding indicates management practices are an important driver of the carbon footprint for farms, plants and transportation fleets, rather than the geographic region, business model, or size of the farm or organization.

In 2008, the Innovation Center worked with industry stakeholders to develop a roadmap of opportunities to reduce GHG emissions and build business value. Ten projects are currently under way. These projects explore best and next practices for feed efficiency, manure management, energy management, improved packaging formats, processing technologies and fuel efficiency.

The Innovation Center has collected a variety of success stories, case studies and best practices, providing a platform for industry partners to learn from one another and make informed decisions.

“Sustainability has become a new way of living and a new standard for managing how we do business,” said Connie Tipton, president and CEO of the International Dairy Foods Association. “The study is helping dairy businesses to see that reducing GHG emissions not only meets consumers’ expectations for more earth-friendly products, but also reduces plant operation costs.”

The carbon footprint study will be published in a peer-reviewed scientific journal in 2011. In addition, studies on nutritional value, economic impact and environmental measures such as water quality and conservation are under way.

Jerseys: More cheese, smaller hoof

With more than 40% of U.S. milk production utilized in cheese, smaller Jersey cattle produce reductions in water and land usage, fuel consumption, waste output and green GHG compared to their Holstein counterparts.

Per unit of cheese, the Jersey carbon footprint (total CO₂-equivalents) is 20% less than that of Holsteins, according to findings from an LCA study presented by Dr. Jude Capper, Washington State University, at the joint meetings of the American Dairy Science Association and American Society of Animal Science. Conclusions were based on a year of dairy herd performance information from nearly 2 million dairy cows in more than 13,000 herds in 45 states. Capper and coauthor Roger Cady, with Elanco Animal Health, compared production systems using 1,500-lb. Holstein cows and 1,000-lb. Jersey cows. Although volume is lower, Jersey milk is higher in fat and protein content, yielding 12.5 lbs. cheese/cwt., compared to 10.1 lbs./cwt. from Holstein milk.

Capper and Cady determined 8.8 billion lbs. of Jersey milk were needed to produce 1.1 billion lbs. of cheese, 19% less than the 10.9 billion lbs. required from Holstein milk. More Jerseys (91,460 animals) were needed to produce the same amount of cheese as Holsteins, but the total body mass of the Jerseys was 26% smaller. Total feed consumption decreased by 1.75 million tons with Jerseys, and Jerseys produced 2.5 million tons less manure. Less water, land and fossil fuels were required for the Jersey cheese, resulting in a 20% reduction in the carbon footprint.

The research was funded by National All-Jersey Inc., representing 1,000 producer members to promote the increased production and sale of Jersey milk and milk products.

FYI

■ The **Innovation Center for U.S. Dairy** provides a forum for the dairy industry to work together pre-competitively to address barriers and opportunities to foster innovation and increase sales. For more information, **e-mail:** innovationcenter@usdairy.com or go to **website:** www.usdairy.com/sustainability.

■ For more information on the Jersey study, contact **National All-Jersey Inc.** via **phone:** 614-861-3636; **e-mail:** naj@usjersey.com or **website:** www.usjersey.com.