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As people have grown more concerned about global climate change and carbon emissions, the processes involved in agriculture – specifically dairy production – got a black eye from many.

But a new study, partly funded by checkoff dollars, that measured the greenhouse gas (GHG) emissions of producing a gallon of milk and getting it into the consumers' hands shows that footprint is far smaller than many had thought.

The Applied Sustainability Center at the University of Arkansas recently completed a study with funding from the Innovation Center for U.S. Dairy that mapped out the life cycle of producing a gallon of milk in order to arrive at its "carbon footprint."

Data was collected from 500 farms, 50 dairy plants and 210,000 trips that collected milk from farms. The study also included the energy needed to grow the crops to feed the cows.

Kimberly Clauss, a dairy farmer from California, spoke with Wisconsin State Farmer about the study during World Dairy Expo last week in Madison. She is a member of the board for the Innovation Center for U.S. Dairy, a group formed to bring the whole industry together. The 31-member board is looking at projects on product image, sustainability, globalization, health and wellness, and others, but this study grew out of a stated goal – cutting the GHG emissions of the dairy industry by 25 percent by 2020.

In order to do that, the industry needed to know where it stood. This new study, Clauss said, shows that GHG emission from the U.S. dairy industry are about 2 percent of the total U.S. emissions – far less than some earlier reports had attributed to the industry. Some publicized reports had the dairy industry producing 18 percent of all U.S. GHG



Image Credit: Jan Shepel
Kimberly Clauss, a dairy producer from Hillmar, California, spoke with farmers last week at World Dairy Expo about a recently completed carbon footprint study focusing on a gallon of milk.

emissions – this study provides science-based facts to refute such pronouncements, she said.

“As a dairy producer, it’s so great to see this study. This provides a base line that we can all agree on. We’re in a great place to counteract the negative press from earlier reports with this University of Arkansas study,” she said.

The study took data from 500 farms that were selected to reflect the different sizes and diversity among producers and measured their emissions. It also measured GHG emissions from the production of feed, transportation to processing and transportation to retailers, she said. The farmers and the shippers who were part of the study were kept anonymous as part of the study, she said.

The study goes a long way toward dispelling the myth of “agriculture’s long shadow” as outlined in one high-profile media report, she said. “For us, this is the first major project and we see more things that we can do both to improve dairy’s carbon footprint and to measure what it is,” she said. “The report is still being peer-reviewed, but dairy farmers are extremely excited. The scientific proof behind it gives us a better seat at the table.”

The next phase of the project, building on this data, will be to measure the carbon footprint of cheese production – something that will no doubt be of interest to Wisconsin, Clauss said.

Going forward, she said, the Sustainability Council at the Innovation Center will focus on things dairy producers can do to reduce their carbon footprint like adjusting the rations they feed to their cows and doing energy audits on farms. Those are a couple of the things Clauss has done on her family’s farm in Hilmar, Calif.

She is a third-generation farmer who farms with her two sisters, a brother-in-law and her father. They have three Jersey farms all right next door to each other. “Dad started in the 1950s with his parents,” she said. The three farms together have 5,000 cows total. Heifers are sent out to be raised and the family also farms in Texas, she said.

Clauss, who manages one of the family’s dairy farms herself, has also been active nationally. She served six years on the Dairy Management Inc. (DMI) board and had been chairwoman of the National Dairy Board. Now she’s serving on the Sustainability Council of the Innovation Center, as well as a subcommittee looking at globalization.

Projects already in the pipeline for the sustainability group include studying nutrient management on crops, ideal rations, actual processing of milk, looking at barriers to using manure digesters, packaging and best practices in trucking, she said.

“It’s neat to see the changes that the industry can make to improve the way we do things and projects the industry can work on,” she said.

Funding for the carbon footprint study came from dairy checkoff dollars approved through DMI totaling \$650,000. The study was also supported by \$2 million that came from other companies that were interested in providing support.

The total carbon footprint for 1 gallon of milk, from field to consumer, came in at 17.6 pounds of carbon dioxide equivalent, the study concluded, but Clauss said the exact figure is somewhere between 15 and 20 pounds, based on some variations in the system.

For Clauss, the study is a call to action for producers, who “need to tell our story,” she said.

The study also gives producers a base line from which to learn and make improvements, she said. The study is showing that there’s a great deal of variation among farms and farms with the best carbon “performance” could serve as models to improve the industry.

Farms with the best feed conversion had lower carbon footprints, the study showed, and certain manure practices, like anaerobic lagoons are a significant source of GHG emissions.

Clauss looks at the study as a base line from which the industry can make improvements, further reducing the carbon footprint of milk production.