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# GHG project focuses on enteric methane

**Bottom Line**

with
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OVER the past few months, I have had several discussions with Dr. Juan Tricarico, newly appointed director of the Cow of the Future project, which is sponsored through the Innovation Center for U.S. Dairy.

I thought it important to update the academic and industry dairy nutrition community on the opportunity at hand to help realize the potential benefits of this project.

## Projects

Until recently, I had very little knowledge of the broad-based efforts being initiated under the umbrella of Dairy Management Inc. (DMI), which is funded by the 15 cents/cwt. dairy farmer checkoff to promote dairy products in the U.S.

In 2008, DMI established the Innovation Center for U.S. Dairy (www.usdairy.com) to provide a forum for the dairy industry to work together pre-competitively across the value chain to foster innovation and grow sales.

Increasing the sustainability of the industry — economically, environmentally and socially — is one of six priorities the dairy industry is addressing cooperatively through the innovation center.

In January 2009, the dairy industry announced its first voluntary goal on sustainability: to reduce greenhouse gas (GHG) emissions of fluid milk — from farm to retail — 25% by 2020. Reducing GHG emissions will help the industry build business value through cost savings and new sources of revenue.

Ten projects have already been initiated that are estimated to get the dairy industry nearly halfway to the goal while delivering $238 million in business value to the industry. Projects cover the spectrum from farm to processing, manufacturing and transportation and have undergone extensive review by dairy experts to ensure that the assumptions and goals are valid.

Three projects focus on reducing methane emissions: Dairy Power and Biogas Capture & Transport focus on methane capture from manure, whereas the Cow of the Future project addresses enteric methane produced during feed digestion (Tricarico, personal communication).

The Cow of the Future team has already completed a draft of research priorities (Knapp et al., 2011) to mitigate enteric methane emissions. It is their hope that industry and academic stakeholders will use the paper to stimulate ideas to advance collaborative research efforts needed to reach this voluntary GHG reduction (Figure).

## Research priorities

The draft research priority document identifies eight major areas of focus for research to reduce enteric methane per unit of milk produced or to potentiate the development of new methane mitigation strategies and technologies.

The five research areas considered to directly affect methane emissions include:

1. Rumen function and modifiers;
2. Enhancing feed quality and ingredient usage to improve feed efficiency;
3. Genetic approaches to increase individual cow productivity;
4. Management practices to increase individual cow productivity, and
5. Managing the herd structure to the reduce number of cow-days of non-productive animals.

Three research areas have been identified to provide a foundation and integration of knowledge that will strengthen research efforts in the previous five areas, including:

1. Rumen microbial genomics and ecology;
2. Development and refinement of methane measurement techniques, and

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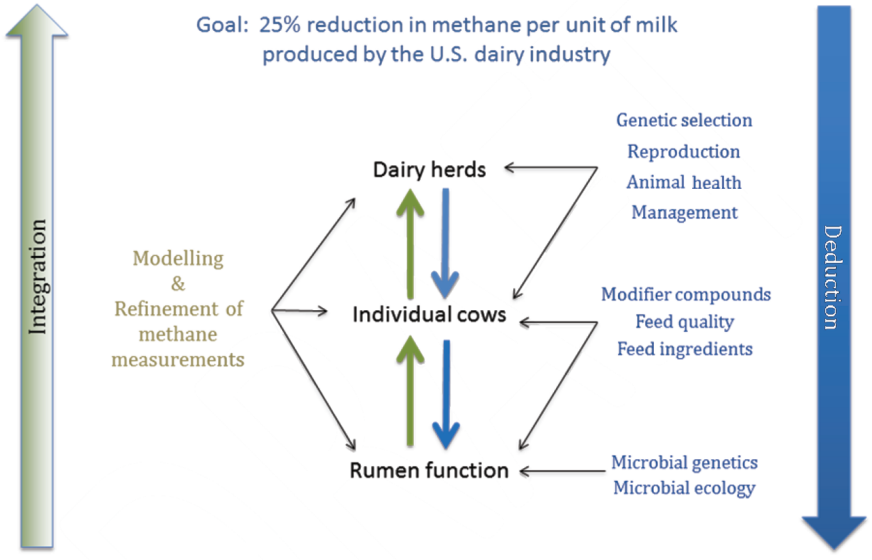
**How methane mitigation research areas fit together to reduce methane emissions**




Source: **Innovation Center for U.S. Dairy, Cow of the Future white paper.**

3. Modeling efforts to quantitatively integrate knowledge.

## Staying connected

The Cow of the Future website at www.usdairy.com/Sustainability/GreenhouseGas Projects/Pages/CowoftheFuture.aspx offers a way to stay abreast of current activities.

One of these activities is a Best Management Practices Workshop to be held in Chicago, Ill., on Dec. 14. The goal is to initiate the process for identification and documentation of practices currently being used to mitigate enteric GHG emissions.

The innovation center is also introducing the U.S. Dairy Sustainability Awards program to recognize dairy farms, businesses and collaborative partnerships for efforts that deliver outstanding economic, environmental and/or social benefit to help advance the sustainability of the dairy industry. Winners of the 2011 program will be announced in March 2012.

While the Dec. 1 deadline for the 2011 nominations has passed, nutritionists may want to think of clients who would be suitable candidates for the 2012 awards for outstanding dairy farm sustainability and outstanding achievement in energy.

## The Bottom Line

The environmental impact of U.S. milk production has been significantly reduced since 1944, primarily due to increases in milk production per cow.

Implementation of the latest technologies and management practices by the U.S. dairy industry along with continued genetic progress in milk yields are expected to result in 10-12% reductions of methane emissions per unit of milk over the next decade (Knapp et al., 2011).

Further reductions will require a collaborative effort between industry and academia. The dairy industry is simply too visible and its products too valuable to the nutritional well-being of the human population to ignore opportunities to be proactive in further reducing the industry's environmental impact.

Cow of the Future is both a positive and proactive step in the right direction to meet these goals and also enhance the dairy industry's image among consumers.

## Reference

Knapp, J.R., J.L. Firkins, J.M. Aldrich, R.A. Cady, A.N. Hristov, W.P. Weiss, A.D.G. Wright and M.D. Welch. 2011. Cow of the Future research priorities for mitigating enteric methane emissions from dairy. Accessed at: www.usdairy.com/Sustainability/Documents/Cow%20of%20the%20Future%20Research%20Priorities%20White%20Paper.pdf. ■