

# GHG Reduction Project: Cow of the Future

The 9 million dairy cows in the U.S. provide healthy, nutritious food to people both here and around the world. A dairy cow's unique four-chambered stomach allows her to digest the high-fiber feed necessary for milk production. But this "rumen" stomach also produces methane gas, which is 23 times more potent than carbon dioxide as a greenhouse gas. Approximately 8.9 million metric tons of methane gas are released into the environment by dairy cows each year, primarily through burps or enteric emissions.

Implementing strategies to reduce these emissions not only is good for the environment, but also can increase feed efficiency and herd productivity.

## Opportunity: leverage cutting-edge research

Leading agricultural scientists and industry researchers around the world have been working on a wide array of strategies to reduce enteric methane emissions in dairy cows. These experts are working in the laboratory to test ideas and within the cow herself to evaluate real-world results.

Hundreds of different studies have been performed or are under way to determine best practices for methane emission reduction in dairy cows.

## Opportunities to reduce dairy cow enteric emissions

- Nutrition
- Immunology
- Physiology

## Solution: identify and share practices for methane emission reduction

The Cow of the Future project, endorsed by the Innovation Center for U.S. Dairy, is facilitating unprecedented collaboration across boundaries to accelerate innovation. Some of the practices under consideration include:

### Feed improvements:

These can include the use of mineral supplements and probiotics and reducing feed particle size. Improving dairy feed can create a more efficient dairy cow, meaning fewer cows are needed to meet production requirements, and less methane emissions all around.

### Natural additives:

The use of fatty acids (such as flaxseed with its Omega-3 nutrients) and plants such as yucca and brown seaweed have demonstrated potential in reducing methane emissions.

### Reducing rumen organisms:

Studies have shown that microorganisms in a cow's stomach may contribute up to 37 percent of the methane emissions. Developing safe and effective methods of reducing or eliminating these microorganisms could contribute to the overall reduction of a cow's methane emissions.

## Collaborators: leading academic researchers + NGOs + industry + government

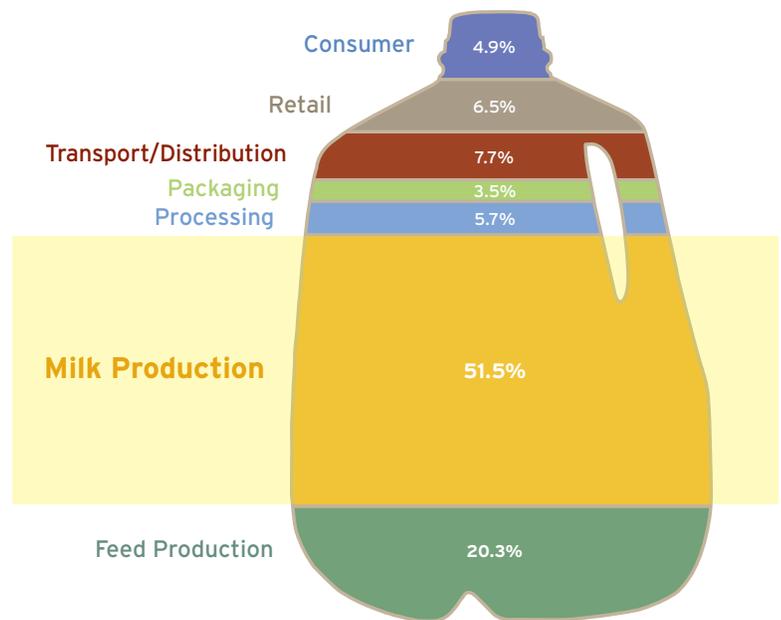
The total team is composed of 50 members, including 10 of the top agricultural universities in the U.S., the World Wildlife Fund, Land O' Lakes and the USDA Agricultural Research Service.

## Cow of the Future: project goals and milestones

The milk production segment of the U.S. dairy supply chain contributes 51.5 percent to the fluid milk carbon footprint. Cow of the Future will help achieve the Dairy 2020 goal to reduce this by 27 percent.

The goal of the Cow of the Future project is to accelerate the development and adoption of best practices to reduce enteric methane emissions.

## Supply Chain Emissions for Fluid Milk



"Greenhouse Gas Emissions of Fluid Milk in the U.S." University of Arkansas, 2010.

### Comprehensive Review of Research Studies

More than 125 cutting-edge research studies were reviewed to identify the most promising areas of research.

Complete

### Establish a National Panel of Experts

Composed of industry, academic and government experts, this panel will be responsible for identifying the most effective enteric methane reduction opportunities for a dairy farm. This panel also will work to establish a national research agenda to meet 2020 goals.

2010

### Implementation of Updated Research and Best Practices

As research continues to reveal the most promising best practices based on methane footprint reduction, economic viability and scalability, this information will be disseminated to dairy farmers across the country for implementation.

Ongoing through 2020

"This is an incredible amount of cooperation from universities throughout the world. Our research initiatives have the potential to discover new scientific strategies to help mitigate greenhouse gas emissions. We are optimistic that these strategies, once identified and implemented, could lead to a long-term reduction in greenhouse gas emissions from dairy herds worldwide."

William Wailes, head of Animal Sciences, Colorado State University, Cow of the Future project team

Learn more at [www.USDairy.com/Sustainability](http://www.USDairy.com/Sustainability).