



U.S. Dairy Sustainability



Legacy of Environmentally Conscious Milk Production

As a global leader in sustainability, the U.S. dairy industry has a long-standing commitment to healthy people, a healthy planet and healthy communities. The progress is striking. In 1944, the United States was home to 25 million dairy cows. In comparison, the United States today produces 60 percent more milk than in 1944 but with only 9 million cows—a third of the herd size. Thanks to U.S. dairy farmers’ relentless use of careful management and continuous adoption of innovative practices such as those related to cow comfort, improved feed and genetics and modern barn design, milk is being produced in the United States in an especially efficient way, using significantly less water, land and other resources than ever before.

For generations, the U.S. dairy industry has demonstrated the unwavering pursuit of implementing best farming practices and uses technology and advanced management techniques to reduce the environmental footprint of milk production

and processing. U.S. dairy farmers have a long history of being excellent stewards of their land and animals, protecting and conserving natural resources and optimizing cow comfort. Milk and dairy product processors in the United States are also fully invested


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- In 2017, producing a gallon (3.79 liters) of milk involved 30% less water, 21% less land and a 19% smaller carbon footprint than in 2007.
- Of all GHGe in the United States, the dairy industry—from feed production to post-consumer waste—currently contributes only 2%. The U.S. dairy community is taking proactive steps to reduce that even further. For comparison, the transportation sector generates 28.9% of GHGe in the United States.
- The U.S. leads the world by producing more with less:
 - ◇ The United States is a global leader in herd efficiency, producing four times more milk per-cow than the average global cow.
 - ◇ The average GHGe footprint per gallon (3.79 liters) of U.S. milk is nearly 50 percent lower than the world average.



U.S. Dairy Sustainability

Committed to Environmental Stewardship and Continuous Improvement

in efforts to minimize water and energy use, reduce greenhouse gas emissions (GHGe) and turn waste into value.

This passion across the supply chain positions U.S. Dairy to help food and beverage manufacturers worldwide capitalize on the growing demand for more nutritious and delicious products made from socially, environmentally and economically responsible sources. A wide range of wholesome and natural U.S. dairy products and ingredients that help foster global health and wellness across all age groups starts with the nutritious milk that dairy cows produce. Successful production depends not only on top-notch cow care, but also on clean air and water, healthy soil and vibrant ecosystems.

The goal is to help feed a growing global population that is expected to reach 9 billion by 2050 in the most environmentally responsible way possible. This includes a commitment to continuous improvement in areas that align with the United Nations Sustainable Development Goals, specifically those focused on food security, human health and responsible stewardship of natural resources, including animals.

U.S. dairy farmers also strive to achieve these environmental goals without raising costs for consumers.

DAIRY COWS: THE ORIGINAL UPCYCLERS

A single U.S. dairy cow produces an average of 144 servings of milk per day (250 ml per serving) that contain key nutrients essential to human health such as calcium, vitamin D, potassium and protein.

To maximize nutrition, U.S. dairy cows eat a specially designed diet formulated to provide optimal nourishment while also providing benefits across the food chain. Cows' ability to process materials that humans can't digest, like byproducts from food processing such as citrus pulp and almond hulls, minimizes the waste associated with food production.

ANIMAL CARE

95% of U.S. dairy farms are family-owned and operated businesses. Whether small or large, U.S. dairy farms care about providing the best products possible to families everywhere. One of the main priorities for U.S. dairy farmers is the health and safety of their cows—the biggest driver of their business.

98% of U.S. milk comes from dairies voluntarily participating in Farmers Assuring Responsible Management (FARM), the first livestock animal care program in the world to be recognized by the International Organization for Standardization.

U.S. DAIRY'S COMMITMENT

The U.S. dairy industry takes pride in its rich heritage of land stewardship and long-term commitment to sustainable dairy farming. The [Dairy Sustainability Alliance](#)[®] has brought together more than 100 organizations from across the value chain to proactively and pre-competitively address environmental and sustainability challenges. Those who've taken the [U.S. Dairy Sustainability Commitment](#) adopt and report on defined criteria for important areas like animal care, environmental stewardship, food safety and traceability



How U.S. Dairy Delivers Sustainable Nutrition



Having a four chambered stomach means cows can digest food that people can't eat and convert it into nutritious milk

Nutrient-rich foods and beverages promote health and wellness



Anaerobic digester systems on dairy farms convert manure and food waste into a source of renewable energy as well as fertilizer and fiber

and community contributions. More than 70% of U.S. Dairy Export Council members have taken the pledge as of 2019.

By adopting new farming practices and technologies as they advance, U.S. dairy farmers and processors continue to produce safe and nutritious products and use progressively fewer resources to do so. This production model has positioned U.S. dairy farmers as global leaders in herd efficiency. According to USDA data, annual milk production per cow in the United States was 10,500 kg in 2018, compared to per-cow production of 6,600 kg in the European Union, 6,100 kg in Australia and 4,400 kg in New Zealand.

A 2019 [report](#) from the Food and Agriculture Organization of the United Nations (FAO) and Global Dairy Platform on climate change found that North America is leading the world when it comes to efforts to reduce dairy GHGe. North America was the only region of the seven studied where both emissions intensity and absolute emissions fell for the timeframe of the report (2005-2015) while overall milk production rose.¹

GHGe INTENSITY BY REGION

REGION	PERCENT CHANGE IN ABSOLUTE EMISSIONS (2005-2015)
North America	-0.5%
Russian Federation	3.0%
Western Europe	7.0%
Eastern Europe	11.0%
Central & South America	14.0%
Oceania	16.0%
South Asia	20.0%
East Asia	30.0%
West Asia & Northern Africa	32.0%
Sub-Saharan Africa	33.0%

Source: FAO and GDP¹

STRIVING FOR NET ZERO GHGE

The U.S. dairy industry takes an open, transparent and science-based approach to measuring and communicating its progress. In 2008, U.S. dairy farmers formed the Innovation Center (IC) for U.S.

Dairy to assess, manage and continuously improve the environmental, social and economic sustainability of U.S. Dairy from farm to table. As a result, life cycle assessments were completed to understand environmental impacts. Of all GHGe in the United States, the dairy industry from feed production to post-consumer waste contributes only 2%.

In 2019, the U.S. dairy community came together to create a path toward achieving net zero GHGe and significant improvements in water quality by providing the tools, expertise and financing to help milk producers reach specific environmental outcomes. While net zero emissions may not be achieved by every farm individually, the collective efforts of all dairy farms will lead to a net zero GHGe for U.S. dairy farm production.

GLOBAL LEADERSHIP, SCIENCE-BASED MEASUREMENTS

U.S. Dairy in 2019 became the first agricultural industry sector to formally gain [GHG Protocol](#) endorsement



for IC's accounting and reporting emissions resource. Extensive reviews by the [World Resources Institute \(WRI\)](#) for compliance

with the GHG Protocol's Corporate Standards were required for this prestigious designation.

REDUCE, REUSE, RECYCLE—U.S. DAIRY STYLE

U.S. dairy stakeholders are refining and improving efficiency and technologies to reduce waste further, and turning it into value.

One byproduct of U.S. dairy farms with sustainability potential is cow manure, a natural fertilizer that also converts into a renewable energy source. Nutrient-rich cow manure fertilizes croplands to improve growth yields of crops for people and animals alike. One cow produces 64 liters (17 gallons) of manure per day. That's enough fertilizer to grow 25 kilograms (56 pounds) of corn or 38 kilograms (84 pounds) of tomatoes.

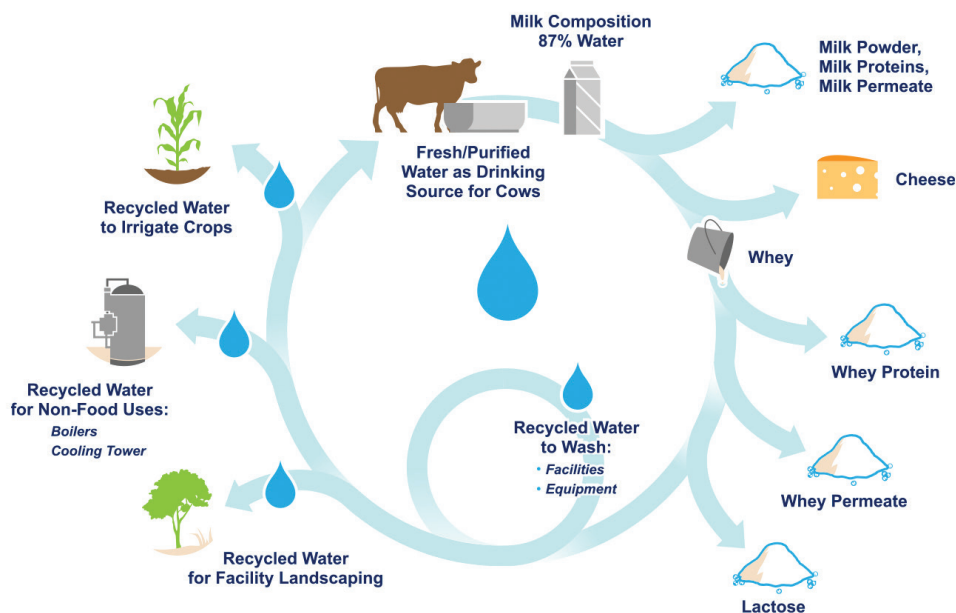
The U.S. dairy industry takes sustainability one step further to create additional value from manure. Anaerobic digester systems and evaporative technology reduce emissions while converting manure and commercial food waste into electricity, fuel for cars and trucks, fiber and, of course, fertilizer.

¹ FAO and GDP. 2018. Climate change and the global dairy cattle sector - The role of the dairy sector in a low-carbon future. Rome. 36 pp. Licence: CC BY-NC-SA- 3.0 IGO





Example of Water Reclamation in the U.S. Dairy Industry



WATER RECLAMATION

Water conservation is a key part of processing. At dairy farms, water is re-used as many as five or six times—from cleaning milking parlors to running through piping to help cool the milk. And since about 87% of milk is water, with the help of new technologies, U.S. dairy farmers can recover it, treat it and use it again for things such as crop irrigation.

REGENERATIVE AGRICULTURE

U.S. Dairy is exploring new ideas and investing in practices to improve soil health and avoid or capture carbon emissions. Dairy farms across the United States are increasingly adopting these practices such as conservation tillage, diverse crop rotations and cover crops. For example, a combination of no-till and strip-till

methods have helped dairy farmers in drought-ridden regions manage for water scarcity while allowing reductions of chemical use, fuel use and the amount of dust particles in the air. These practices large and small not only focus on the environment but add up to promote the health and well-being of consumers, communities, cows, employees, the planet and business. ■

People have an interest in who grows their food, where it comes from and how it's made, looking to the entire food chain for these answers. The U.S. dairy industry shows responsible production practices and continuous improvement across the value chain, demonstrating its positive impact from farm to table.



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