

Dairy Farms, Sustainability and the Environment



Dairy farmers live on or near the land that they farm and care about protecting the land, water and air for their families, surrounding communities and future generations. Environmental practices on dairy farms are regulated by both federal and state agencies. While requirements vary from state to state, dairy farmers consistently meet or exceed these regulations.

Dairy farmers are focused on sustainable agricultural practices to ensure their farms continue to meet consumer demand for quality products with ever shrinking environmental resources. **Due to innovative practices in cow comfort, improved feed and genetics, and modern barn design, Producing one gallon of milk creates a 19% smaller carbon footprint (and involves 30% less water and 21% less land) than it did 10 years ago.³**

What is Sustainability?

According to the United States Department of Agriculture (USDA), sustainable agriculture is an integrated system of plant and animal production practices that, in the long term, will:

Satisfy human food needs

Enhance environmental quality and the natural resource base upon which the agricultural economy depends

Sustain the economic viability of farm operations

Make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls

Enhance the quality of life for farmers and society as a whole

Today's Sustainable and Environmental Farming Practices

As one of the largest milk producers in the world, the U.S. dairy industry continues to demonstrate significant efficiencies - doing more with less - through the use of best practices and innovations at all stages of the supply chain. These improvements have not only reduced environmental impacts, but also have enhanced the economic and social responsibility of dairy farms, businesses and communities. Examples include the following:

WATER CONSERVATION

Water recycling is a standard practice on today's dairy farms, and farmers reuse water in many ways through advancements in technology and innovation.

- Modern dairy farms use a plate cooler, or heat exchanger, to partially cool the milk. As cold well water flows past the milk in a separate stainless steel pipe, some of the heat transfers from the milk to the water. This water is collected and used as drinking water for cows. This approach reduces energy use.
- Dairy farmers use water responsibly in their milking parlors and in manure management and storage. For example, water used to clean the milking parlor can be recycled to flush barns and irrigate fields.
- Most water used to produce dairy goes to growing crops to feed the cows. When water is less available in one area, farmers can:
 - Grow crops that need less water.
 - Import feeds such as alfalfa hay from areas where water is not an issue.
 - Use agriculture byproducts such as cotton seeds as cow feed. This requires no extra water because the crop has already been harvested.
- One benefit of fertilizing the soil with cow manure is to help conserve water. When manure is used as a soil treatment, the water-holding capacity of soil is increased by 20%, resulting in reduced ground water needed to grow crops.³

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MANURE MANAGEMENT

- Manure contains many nutrients, including nitrogen, phosphorus and potassium, which make it an ideal natural fertilizer. Farmers often spread it on their cropland to improve soil quality and crop yield, and reduce use of commercial fertilizers.
- Using cow manure in place of commercial varieties can reduce both fertilizer costs, and nitrate leaching – the downward movement of nitrogen in the soil – which can contaminate ground water.
 - Farmers use a variety of techniques to determine the right amount of fertilizer to reduce nutrient runoff and provide the correct amount of nutrients each field needs. Agronomists, or soil consultants, can help make that determination.
 - No-till farming, planting cover crops and buffer strips and using modern precision agriculture techniques help preserve soil nutrients and water quality.
- Many farms store their manure in state-approved lagoons so they can recycle the organic matter on fields to grow crops for the following year. Practices such as lagoon covers, cap and flare and separation technologies help control, avoid or prevent the release of methane and odor.
- New methane digester technology on some dairies converts manure into methane-rich biogas, a renewable fuel that can be used to generate electricity.
 - After the manure is collected a methane digester heats the manure, and bacteria break it down. This releases a biogas called methane, which is pumped into a generator and can then be used as renewable energy.
 - Larger farms with this technology may generate more than enough electricity to run their operations, and they can sell the excess energy back to the local utility company who use it within local communities.

PEST MANAGEMENT

Dairy farmers comply with state and federal requirements in the interest of a healthy, safe workplace and environment for their animals, workers, families and communities.

- The U.S. Environmental Protection Agency (EPA) has strict regulations about farm practices involving the use of pest and weed control products. Applicators are required to receive training on the safe use of these products. The government monitors foods for potential health problems related to the use of these products.
- States are authorized to regulate pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and state pesticide laws. States may place more restrictive requirements on pesticides than the EPA. Pesticides must be registered by the EPA and the state before distribution.
- Many dairy farmers reduce the use of conventional pesticides through integrated pest management (IPM) programs which combine various techniques to keep flies and other pests at bay.

WATER QUALITY

Farmers protect the water on and near their farms through methods to minimize potential runoff of manure from their operations. Federal, state and local laws are in place to regulate manure application and protect ground water from contamination.



- The federal government offers incentives to help dairy farmers protect the water supply. For example, many farmers receive technical assistance when they upgrade their irrigation systems and manure storage facilities.
- Dairy farmers use runoff control practices to prevent clean water from becoming contaminated, and to capture runoff before it reaches a waterway, such as:
 - Methods to divert clean water away from manure include rain gutters and downspouts.
 - Thick grasses can act as buffer strips that absorb runoff, keeping it out of clean waterways.
 - Drainage systems are monitored during manure application to ensure clean water is not contaminated.
 - Common practices used to collect runoff include settling basins and vegetative filter strips, both of which slow the rate of runoff and trap the manure.

Dairy in the U.S. contributes only 2% of greenhouse gas (GHG); total agriculture contributes 9% of GHG in the U.S.² The dairy community is working to achieve greenhouse gas neutrality, optimize water usage and improve water quality by 2050.

DAIRY FARM EXPANSION

- Protecting the environment has more to do with proper management practices than the number of cows on the farm.
- Dairy farms, regardless of size, consistently meet state and federal standards and work to minimize any impact their farms may have on the environment.
- America's dairy community is an important contributor to our nation's overall economy, supporting more than 3 million jobs.

SOURCES

¹ Capper JL, Cady RA. The effects of improved performance in the U.S. dairy cattle industry on environmental impacts between 2007 and 2017. *J. Anim Sci.* 2019

² Thoma, G., et al. Greenhouse Gas Emissions from Production of Fluid Milk in the US. University of Arkansas & Michigan Technological University, 2010.

³ Adugna, Getinet. A review on impact of compost on soil properties, water use and crop productivity. *Agricultural Science Research Journal*. Vol. 4(3). 2018.