Most dairy farmers live and work on their farms. It’s important to them to protect the land, water, and air for their animals, families, and surrounding community, as well as for future generations. In addition, environmental practices on all dairy farms are tightly regulated by both federal and state agencies.

Dairy farmers employ a wide range of environmentally sound practices. In cooperation with experts such as state and federal departments of natural resources, Cooperative Extension Service and land grant universities, dairy farmers continually enhance the natural resources in their stewardship.

**Water Conservation**

Dairy farmers use water responsibly and judiciously. Many conservation technologies are in place to conserve water. For example, water used to clean the milking parlor is reused to clean feed alleys and then to irrigate fields.1, 2

Modern dairy farms use a heat exchanger to partially cool the milk. As cold well water flows past the milk in a separate tube, some of the heat transfers from the milk to the water. This water is collected and used again as drinking water for cows. This approach reduces energy use and saves on water pumped from the ground by using it more efficiently.3

Using manure to meet crop nutrient requirements can also improve soil’s productivity and water-holding capacity. Application of manure to crop land increases the water-holding capacity of soil by 20 percent so less groundwater is needed to grow crops.4

In addition to dairy farmers’ personal commitment, farms must abide by clean water laws.5

**Manure Management**

Dairy farmers know that natural manure replenishes the soil so crops grow better. High-tech manure management takes advantage of this natural fertilizer while avoiding pollution. Using manure also reduces the amount of commercial fertilizers needed.

Engineers and other experts help dairy farmers design manure handling systems, from storage to transportation to land application. These experts take into account animal feeding and housing methods, different crop types, and manure application techniques.

Manure is spread on crop fields according to detailed nutrient management plans. These plans take into account the types of soil on the farm, the terrain of the fields, soil moisture levels and the amount of nutrients the next crop on that field will need.7

New methane digester technology on some dairy farms converts manure into methane-rich biogas, a renewable fuel that can be used to generate electricity. Farms with this technology may generate more than enough electricity to run their operations, and they can offer the excess energy back to the local utility company.6

Soil and water conservation districts have computer programs and worksheets to help dairy farmers develop a plan to best use manure. The Manure Application Planner (MAP) is a computer program that generates a thorough plan and estimates the costs of using manure compared with using only commercial fertilizer. MAP can also be used to compare different manure management systems.6, 9

Larger-scale dairy farms are required to follow detailed manure management plans. These plans are continually updated to reflect new technologies.10

States regularly update their guidelines regarding manure management. For example, in 2009, the Iowa Legislature passed a bill pertaining to winter application of manure on snow covered and frozen ground. These new rules went into effect in 2010.11
Air Quality

Dairy farmers improve air quality by following proper manure storage practices and by maintaining clean facilities.\(^{12,13}\) Government regulations are also in place to protect air quality. In some states, larger farms are required to maintain an odor management plan, which helps to identify potential odor sources, determine control strategies to reduce these odors, and establish criteria for implementing these strategies.\(^{14}\) Because farmers want to be good neighbors, they do their best to schedule odor-generating activities, such as applying manure to fields, around their neighbors’ plans.\(^{15}\)

To maintain a healthy and clean environment, many dairy farmers voluntarily participate in research efforts to help measure and monitor air quality more accurately.\(^{16}\) University researchers and industry manufacturers continually work with dairy farmers to identify new ways to control odor such as reducing the ammonia-nitrogen emissions by removing excess protein in the cow’s diet, improving manure handling and storage, and incorporating manure in the field.\(^{17,18}\)

Farm Management Practices

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 safe use of these products. The government monitors foods for potential health problems related to the use of these products.

While all farmers need certain fuels, oils, paints and degreasers to run and maintain farm equipment, there are EPA rules and regulations for proper storage and disposal of these products. Dairy farmers comply with requirements in the interest of a healthy, safe work place and environment for their animals, workers, families and communities.\(^{19}\)

States are authorized to regulate pesticides under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and under state pesticide laws. States may place more restrictive requirements on pesticides than EPA. Pesticides must be registered both by EPA and the state before distribution.\(^{20}\)

Also refer to Midwest Dairy Association fact sheet “Sustainability and Dairy Farming.”

This fact sheet was reviewed by John Fetrow, VMD, MBA; Mike Hutjens, PhD; Lloyd Metzger, PhD; JW Schroeder, PhD; and Leo Timms, PhD, in November 2011 for its content and accuracy.

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