

MANAGING MANURE NUTRIENTS



Improving Dairy Forage and Manure Management to Reduce Environmental Risk

This Nutrient project is one of six main areas of research emphasis at the U.S. Dairy Forage Research Center

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Objectives:

The primary objective of the project is to address knowledge gaps in understanding and managing the nutrient cycles of modern dairy farms. Under this broad research umbrella are five specific objectives:

1. To determine the effects of dairy diets and herd management on manure nutrient excretions and nutrient losses to the environment.
2. To determine the effects of manure and crop management practices on nutrients, sediment, and pathogens in surface runoff and other pathways.
3. To determine the effects of season, dairy diet, and field management of manure on gaseous emissions of ammonia, nitrous oxide, carbon dioxide, methane, and volatile organic compounds.
4. To determine the effects of mechanical application of dairy manure on nutrient uptake and nutritional characteristics of annual and perennial forages.
5. To develop conventional and organic crop management strategies to facilitate the exchange of nitrogen, phosphorus, and potassium as manure and feed between neighboring dairy and cash grain farms.

Approach:

Improved management of dairy farms requires successfully managing its nutrient flows, both to maximize nutrient use by animals and crops (to optimize profit), and to minimize nutrient loss to the environment (to optimize sustainability).

We will investigate most aspects of nutrient cycling throughout the dairy farm system with a variety of methods and at different scales (replicated field plots, field-scale paired watersheds, feeding trials with replicated pens of heifers, etc.). Some experiments also include non-nutrient elements such as eroded sediment and pathogens.

U.S. Dairy Forage Research Center

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