

# Cornell model helps dairy farms reduce nitrogen, save money

March 29 2019

---



Waterways might grow cleaner, thanks to improvements in the Cornell Net Carbohydrate and Protein System, a dairy nutrition model. Credit: Jason Koski, Cornell University

The Chesapeake Bay—about 235 miles down the Susquehanna River from New York's Southern Tier—and other waterways might grow cleaner, thanks to new updates and improvements in a Cornell dairy nutrition model.

The Cornell Net Carbohydrate and Protein System (CNCPS) is a model that helps farmers determine what to [feed dairy cows](#) to make milk production more efficient and environmentally friendly. And while less nitrogen makes its way into the manure and subsequent rain runoff flowing into the bay, farmers also might save money, according to research published in February in the journal *Applied Animal Science*.

Through on-farm research in Broome, Tioga and Delaware counties in New York, co-authors Michael Van Amburgh, professor of animal science, and Larry Chase, professor emeritus of [animal science](#), found that farmers can feed cows less protein, maintain a cow's milk-production output and reduce nitrogen in the manure, so that the nutrient does not run off into waterways and lakes.

"I call it a win-win. The dairy farmers win because the cow is more efficient and more profitable. Society wins because we're now putting fewer nutrients back into the environment or into the water than we would have had we not made the adjustments," said Chase.

Cows at the eight farms studied in the Southern Tier averaged about 14 percent less nitrogen in their manure.

Excess nitrogen from farm runoff into rivers, creeks and other waterways can promote unwanted algae in lakes, reservoirs or even bays such as the Chesapeake.

On one 50-cow farm, the researchers found the initial amount of protein in the feed was 16.3 percent. Using the updated CNCPS program, the percentage dropped to 14.9 percent. In the farm's manure output, there was 1,607 fewer pounds of nitrogen put into the environment annually with no change in milk production.

On a 565-cow farm, the protein feed input dropped 1 percent, which

resulted in nearly 80 fewer grams of nitrogen in cow's manure daily, thus reducing nitrogen excretion by 18.6 percent. That translates into 35,916 fewer pounds of nitrogen placed into the environment annually, again without negatively impacting milk yield.

In their research, Chase and Van Amburgh noted that reducing the protein portion of the feed to enhance efficiency also saves farmers money. Using 2017 feed prices as a base, a [farmer](#) can save between \$147 and \$157 per cow annually.

Said Van Amburgh: "We are improving the economic margin of dairy farms—while at the same time reducing [nitrogen](#) output and helping the environment. We're all better off."

**More information:** M.E. Van Amburgh et al, Invited Review: Modifications to the Cornell Net Carbohydrate and Protein System related to environmental issues—Capability to evaluate nitrogen and phosphorus excretion and enteric carbon dioxide and methane emissions at the animal level, *Applied Animal Science* (2019). [DOI: 10.15232/aas.2018-01783](#)

Provided by Cornell University

Citation: Cornell model helps dairy farms reduce nitrogen, save money (2019, March 29) retrieved 18 April 2024 from <https://phys.org/news/2019-03-cornell-dairy-farms-nitrogen-money.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.