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# Dairy changes manure applications

In the first year of a three-year project to improve nutrient management practices, this dairy saved \$3,000 on fertilizer

By *Eleanor Jacobs*

Anyone who has driven a tractor with no cab to haul manure in the winter knows the closer to the barn you can spread, the less you suffer. On many dairies that has resulted in fields close to barns being higher in phosphorus and nitrogen than those farther away.

In this age of nutrient management enlightenment, dairy producers know they can't continue to overspread manure on fields, whether close to a barn or not. This is particularly true for dairies located in environmentally sensitive areas. Maxwell Dairy is one such farm.

From the farmyard of the Geneseo, N.Y., dairy, John Maxwell, who dairies with his brother Don, has a panoramic view of Conesus Lake to the east. Some of the Maxwells' fields lie within 2,000 feet of the lake. Two of them, closest to the barn and pastured for 30 years, tested over the limit on the P Index.

Conesus Lake supplies drinking water to five municipalities downstream, as well as being circled by year-round homes. Aquatic weeds have become a nuisance, and in the summer it's difficult to clarify and purify water for municipal use.

A three-year USDA water quality grant is being used to address those problems. The Northwest New York Dairy, Livestock and Field Crops Extension/PRO-DAIRY team is collaborating with SUNY Geneseo and Brockport, the Rochester Institute of Technology and the Livingston County Soil and Water Conservation District to study six sub-watersheds. Researchers want to see if changing practices on three farms in the sub-watersheds can improve the lake's water quality. This is one of the few projects nationally to study sub-watersheds, says Nancy Glazier, an Extension technical associate.

Extension took soil samples; conducted manure analysis; mapped hydrologically sensitive areas (HSA) and areas of highly erodible land; evaluated the farms' current practices; and created nutrient management plans.

Phosphorus is a critical nutrient in this water-



shed, as well as throughout the Finger Lakes, Glazier says. "When phosphorus gets to a certain level, then nutrients have to be balanced to phosphorus. The goal is reduce P in the sub-watersheds to reduce weedbed and algae growth in the lake."

The Phosphorus Starter Project (page 37) shows that leaving P out of the starter in cornfields that soil test high and very high for P doesn't negatively affect silage yield and quality. The Maxwells' experience supports that.

## Changes made

The program is voluntary but as sure as he can see Conesus Lake from his 100-cow dairy, John Maxwell has long known that if he didn't voluntarily make changes he might be forced to do so in the future.

That's why in 1989, the Maxwells worked with their Soil and Water Conservation District to lessen the dairy's impact on the environment. They installed filter strips for milkhouse waste and laid tile around the bunker silo to catch surface water and prevent it from leaching into the silo. They put gutters on the barn to keep clean

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Extension's Nancy Glazier reviews manure management with John Maxwell as his dairy works to lessen its impact on Conesus Lake in the background.

## FYI

■ See the Extension team's website for more information on this grant project: [www.nwnyteam.org](http://www.nwnyteam.org)

water out of manure areas. The Maxwells fenced cows out of a creek that runs through the middle of the farm and put buffer strips on both sides of it. They began strip cropping some of their fields and added a concrete feeding pad in one of the pastures.

The Maxwells typically soil sampled every rotation, which is four to five years of hay and two of corn. The first year of the grant project called for soil testing all 450 acres the Maxwells farm, 302 of it owned. The dairy grows 180 acres of corn, 150 of alfalfa/grass and 40 acres of winter wheat, as well as some oats. Since the dairy daily spreads manure, some fields are left fallow for summer applications. In the future, the Maxwells will ideally soil test a third of their farm each year.

Extension also analyzed the dairy's manure the first year of the project. In general, researchers didn't find that it had extremely high levels of phosphorus. Maxwell attributes that to their nutritionist having balanced rations for lower amounts of phosphorus for a number of years.

Armed with soil tests and manure analysis, the Maxwells can apply manure on fields with the lowest nutrient levels, even if it means hauling the manure farther from the main farm. Depending upon soil tests, the Maxwells apply 15 tons of manure per acre. The Maxwells avoid spreading manure in areas Extension identified as HSA and on highly erodible land in the winter. They haul calf manure to level fields farthest away from stream tributaries.

"Last year we hired another farmer with a 12-row planter to plant some of our corn," Maxwell says. "We picked out three fields that had manure applied and asked him to make one round with no fertilizer." Maxwell flagged those 24 rows in each field and at chopping, he couldn't see any difference in the corn that didn't get additional

fertilizer and that which did.

The decline in fertilizer use was the most impressive result of the Maxwells' participation in the project. They used to apply 100 pounds of 10-26-26 corn starter on the home farm. "Then we increased the amount up to 300 pounds as we went down the road where no manure was applied," Maxwell says.

Based on soil tests, the Maxwells now apply 50 pounds per acre of 10-10-26 starter on the home farm. Then as soil tests indicate, they increase the rate. The Maxwells incorporate up to 60 units of nitrogen preplant on the home farm, increasing that up to 80 units on fields farther away.

"In old days you'd go to a fertilizer meeting and be told that if you applied enough fertilizer, you'd get 200-bushel corn," Maxwell says. "Well, we knew with our soils that even in the best year we'd only get 160 bushels."

Maxwell stresses the importance of regular soil testing, and basing manure and fertilizer applications on the results. "With fertilizer costing what it does these days, getting manure hauled farther saves money," he says. "We're concerned about the environment, but you still have to make a profit."

The grant project helped in that regard: The Maxwells reduced their fertilizer use by \$3,000 the first year of the grant. "And that's when fertilizer was cheap," Maxwell says.

Monitoring Conesus Lake and its sub-watersheds shows declines in algae growth and pathogen levels in streams. Researchers report reduced levels of nitrogen, phosphorus and turbidity in downstream water compared to 2002, the year the project began.

This is the last year of the grant, and the Maxwells will adopt more of the best management practices to improve their farming operation, cut costs and help their neighbor – Conesus Lake. ■