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— Jay Currier, Dodge County dairy farmer



Ben Currier, left, and Jay Currier milk nearly 100 cows. Recent feedlot improvements increased manure storage from one week to one year, and reduced runoff to the South Branch Middle Fork Zumbro River, below, a Mississippi River tributary. Photo Credits: Ann Wessel, BWSR

Dodge County feedlot upgrade aids Zumbro, Mississippi rivers

Working with Dodge SWCD, funds available through NRCS-BWSR partnership, Currier brothers improve water quality, increase efficiency with new manure pit, nutrient management plan tailored to their dairy



Natural Resources Conservation Service website: www.nrcs.usda.gov

MANTORVILLE TOWNSHIP — Dodge County brothers Ben and Jay Currier improved their dairy farm’s efficiency, optimized the fertilizer it produces, and played a role in protecting the Mississippi River when they installed a new manure pit last fall.

Increasing manure storage capacity to one year eliminated the need for weekly hauling and spreading on the 200-acre farm where they milk nearly 100 cows and raise replacement



heifers. The \$572,000 project makes it possible to avoid application in winter and early spring, when manure is most easily carried off by snowmelt and runoff.



By late May, the Currier brothers' pit held nearly seven months worth of manure. The 1.4 million-gallon pit has emergency storage capacity built in. Dodge SWCD staff and NRCS staff were involved in the project, designed by Technical Service Area 7 staff.

RCPP Details

FUNDING: The original \$3.2 million agreement was split between NRCS and BWSR. BWSR addressed a backlog of requests by earmarking an additional \$520,000 — two years' worth of general fund appropriations — for the TSA to handle additional work. The RCPP was available within 11 southeastern Minnesota counties.

PROJECTS: Ag waste systems funded at 90% were completed in Dodge, Houston, Wabasha and Winona counties. Two more, in Houston and Rice counties, were funded at 75% using only state funds. Landowners paid the 10% or 25% match. (The RCPP targeted livestock operations with 500 or fewer animal units. An animal unit is a measure of manure produced. One dairy cow equals 1.4 animal units.) The \$120,000 in remaining funds will help to reduce the risk for one farmer to try rotational grazing, and for two farmers to convert row crops to perennial cover.

ACCOMPLISHMENTS: "We were able to leverage both state and federal dollars to really provide some vital financial assistance to some dairy operators at a time when there really wasn't a lot of profit margin in dairies," said Rochester-based BWSR Board Conservationist Dave Copeland, who served as the state's administrative coordinator for the RCPP. "(The dairies) had some issues they needed to address to reduce or minimize the environmental impacts from their operation. ... We had producers that wanted to do the right thing, they just needed some help."

The Currier brothers' feedlot project was one of four funded at 90% through the \$3.2 million Lower Mississippi River Feedlot Management in Minnesota Regional Conservation Partnership Program project. The five-year, federal-state partnership wraps up Aug. 31, 2021. State-only RCPP dollars funded two more feedlots at 75%.

Funding came from the USDA's Natural Resources Conservation Service via Environmental Quality Incentives Program assistance, and from the Minnesota Board of Water and Soil Resources, whose contribution included Clean Water Funds.

Combined, the six feedlot projects' estimated annual pollution reductions to Mississippi River tributaries include 182 pounds of

nitrogen and 47 pounds of phosphorus. One pound of phosphorus can produce 500 pounds of algae. The work also addresses E. coli.

By reducing phosphorus-loading to the Mississippi River, states' nutrient reductions address the "dead zone" in the Gulf of Mexico. Water from the Currier brothers' farm reaches the Gulf by way of a wetland that flows to the South Branch Middle Fork Zumbro River.

"These guys show all the symptoms of being successful dairy farmers. They have high phosphorus soils. Very productive. They've had a relatively small area to spread manure on for decades. They've been in business for a long time," Blaine Delzer, Dodge SWCD feedlot technician, said during a late-May visit to the Curriers' farm. "The land shows that."

Delzer worked with the Curriers to develop a manure management plan and apply for funds.

"By allowing the Curriers to use their manure as a nutrient source instead of a waste product, there's a lot more control going into where and when that manure is applied. That will really allow for it to be used by the plants in the field rather than having a fallow area where they spread manure for the entire summer and over-apply," Delzer said.

Landowner participation in the RCPP was voluntary. The Curriers, whose share of the project cost totaled about \$67,000, look forward to eventually using the dairy's manure on their own land again.

"Once the manure gets transferred off, then you take



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Left: The fencing Ben and Jay Currier installed along the edge of the pit can be raised and lowered. Having two points to scrape manure into the pit gives them an option if buildup occurs during winter freezes. The 1.4 million-gallon design allows for increased volume due to rainfall. **Middle:** The previous storage area, left of the open barn door, held a week's worth of manure. **Right:** A ramp makes clean-out easier.

your soil samples and as your crop removes the nutrient value that you've got built up in your soil, you want it to decrease as rapidly as you can so you can get to use the benefit of your manure again. That's the goal," Ben Currier said.

Meanwhile, the Curriers have agreements with neighbors who will use the manure on their fields.

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Olmsted County-based NRCS District Conservationist Mike Muzzy, whose territory previously included Dodge County, expanded upon the benefits of using manure as fertilizer.

"It's an organic form of nutrients, so it's more of a slow release," Muzzy said. "Having manure on the field, that does help the soil health and builds the biology in the soil and results in more productive soil. There's a lot of micronutrients in manure that you don't have in commercial fertilizer."

Every three years a technical service provider will sample fields to determine soils' nutrient content.

"In three years' time, with no manure going on our soil, we'll get a chance to see how that decreases," Ben Currier said of the nutrient levels. "That's how we track our success on our end."



Fryer

The 1.4-million-gallon pit, sloped cement cattle yard and low cement diversion wall were completed in October 2020. The berm was seeded in December. A storage tank for milkhouse wastewater, which now outlets into the pit, eliminated a potential source of groundwater contamination. Gutters divert rainwater from barn roofs.

"Having manure storage allows the farmer to have a way to use it as a nutrient, and saves them money on the bottom line, plus takes care of that potential problem in the springtime when things are heating up and people are doing a daily scrape-and-haul," said Peter Fryer, the Chatfield-based Technical Service Area 7 lead engineer who designed the project.

"That water no longer discharges to anywhere but the manure storage facility,"



Nelson

Fryer said. The project augments nutrient- and sediment-reduction benefits of a previous Dodge SWCD project on a farm immediately downstream.

"What people really have to realize is the end-users from here all the way down to the Gulf of Mexico are receiving a benefit," Delzer said. "There is a state benefit, there is a federal benefit to these dollars being used on projects like this."

By late May, the new pit held nearly seven months' worth of manure. Built-in emergency storage makes it possible to exceed the 1.4-million-gallon, 7-foot-deep mark if unexpected circumstances prevent it from being emptied within 12 months. The pit is built to hold 200,000 gallons and withstand a once-every-25-years rain.

Because it lies within southeastern Minnesota's karst region, the pit incorporated safeguards to protect groundwater from seepage that might enter the aquifer through fractures in the limestone bedrock.

"With all manure storage ponds in the karst area, it's a real concerted effort to make sure we build these things as liquid-tight as we can," Fryer said. "In the design, there's water-stops that are put into the concrete pours at every joint."

It was one of the largest projects in Rochester-based TSA 7 engineering technician Chris Nelson's career. He conducted the original site survey and worked onsite with landowners and contractors.

Nelson said involved landowners, exceptional contractors — Hodgman Drainage of Claremont handled earthwork; Leon Nerison of Wanamingo-based B&N Construction handled concrete work — and favorable weather made this one of the easiest projects he's worked on.

"The landowners knew exactly what they wanted. They probably could've managed the contractors and had everything built if they had enough time," Nelson said.

Editor's note: Blaine Delzer worked at Dodge SWCD for 10 years, most recently as a feedlot technician. He also farmed in Dodge County. Delzer died in May 2021.