

Mississippi River Basin Initiative



Dedicated MRBI funding supported a conversion to hay on highly erodible land. This Chisago County farmer's NRCS-supported no-till expansion and fence aids water quality, too, from the St. Croix River to the Gulf of Mexico.



A Chisago SWCD Clean Water Fund grant from BWSR for work in the [Chisago Lakes Chain of Lakes](#) and a Chisago Lakes LID grant covered about 70% of the cost to fence cattle out of a wetland.

VIDEO: [How no-till worked here.](#)



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CENTER CITY — With assistance from the USDA's Natural Resources Conservation Service (NRCS), Chisago County farmer Max Gustafson is helping to improve water quality from here to the Gulf of Mexico.

Mississippi River Basin Initiative (MRBI) funds targeting the Green Lake watershed gave Gustafson more incentive to commit 8 acres of highly erodible land to hay. In subsequent work with NRCS, he expanded no-till to nearly 300 acres and fenced cattle out of a wetland.

Those measures help to keep algae-feeding, oxygen-depleting nutrients such as phosphorus from reaching the Gulf via the St. Croix and Mississippi rivers.

"The Chisago Lakes area is known for its lakes, so I'm sensitive to the fact that we're part of that community and our farmland is right up against the lakes themselves," Gustafson said.

An NRCS initiative, the MRBI centers on practices that improve water quality, restore wetlands, enhance wildlife habitat and sustain agricultural profitability in the Mississippi River basin. Dedicated funds come from the Farm Bill's [Environmental Quality Incentives Program](#) (EQIP). The Chisago Soil & Water Conservation District (SWCD) completed the assessments needed to prioritize the work.

Deb Hermel, the NRCS district conservationist team lead for Chisago, Isanti, Pine, Kanabec and Mille Lacs counties, worked with Gustafson on the hay conversion in 2016. The \$156-an-acre payment helped to offset costs.

Twelve landowners received a total of \$125,675 in assistance through the Green Lake MRBI for 13 projects estimated to keep more than 178 tons of sediment and 218 pounds of phosphorus out of the St. Croix River. One pound of phosphorus can produce up to 500 pounds of algae.



Top: NRCS District Conservationist Team Lead Deb Hermel worked with Chisago County farmer Max Gustafson to identify resource concerns and find conservation solutions. With EQIP assistance from NRCS, Gustafson in 2021 expanded his no-till practice to nearly 300 acres. The farm lies within the Green Lake watershed, the focus of dedicated funding available through the Mississippi River Basin Initiative. One of the Chisago Lakes Chain of Lakes, Green Lake flows to the Gulf of Mexico by way of the St. Croix and Mississippi rivers.

Left: Soybeans grew July 12, 2021, in a field where they were no-tilled into corn stubble from the previous year's crop.

Photo Credits: Ann Wessel, BWSR

A second MRBI focuses on Chisago County's Goose Creek watershed.

"Conservation practices specifically through this initiative are all geared to improve water quality. If it's reducing nitrogen and phosphorus that eventually get to our surface water, reducing sediment — all those things work toward improving the health of the Mississippi River," Hermel said.

She and Gustafson identified other resource concerns and conservation goals during a walk-through of his land shortly after he started farming full time.

Gustafson, 58, returned to the century farm where he grew up in 2004 after a career in the supply chain field. At first, he helped his father part time. Eventually, he bought a second farm, and now raises 450 acres of corn, soybeans and hay alongside a 30-cow-calf-pair beef operation.

A wet spring in 2019 prompted Gustafson to try no-till as a last resort.

"It was either plant no-till or don't plant at all, and I was happy with the results," Gustafson said.

The following year, he expanded the practice from 40 to 200 acres. In 2021, with \$13.80 per acre in EQIP assistance, he enrolled 278 acres in a three-year contract. Cost-share was available through the Chisago SWCD to erect the 1,350-foot-long cattle exclusion fence in 2017. Hermel completed the planning, certification and inspection work through NRCS' Conservation Technical Assistance program.

"It can help be that final little push," Gustafson said of the incentives. "The fencing for



Landowner's Modifications, MRBI Details

NO-TILL ADVICE: Because planter setup is critical, Gustafson suggests finding an experienced mentor. He worked with someone at a co-op who had 20 years of experience and who hosted a field day.

EQUIPMENT MODIFICATIONS: Working with his John Deere 1750 six-row planter, Gustafson adjusted the row cleaners to move the previous year's stubble out of the way. He switched to a single-disk fertilizer opener and heavy duty down-pressure springs to penetrate untilled soil better, and added seed firmers to ensure good seed-to-soil contact. In 2022, he mounted "stalk stompers" to the planter to flatten the corn stalks and prevent them from damaging the implement's tires.

GREEN LAKE MRBI: A total of \$125,675 in dedicated funding supported \$205,585 in projects, leveraging \$78,270 in targeted watershed Clean Water Funds the Chisago SWCD received in 2015, and a \$1,640 Chisago Lakes LID grant. The resulting work involved 12 landowners with 13 projects affecting 829 acres in the watershed. One of those projects is not yet complete; pollution reduction estimates for the rest show the work will keep 218 pounds of phosphorus and more than 178 tons of sediment out of the St. Croix River annually. Projects included 8 acres of hay, 45 acres of grade stabilization, 88.8 acres of waterways, 124.8 acres of grazing land, 129 acres of diversions, and 433.4 acres of water and sediment control basins.

sure I'll put into that category. It's quite an investment — building a new fence. ... It's not necessarily required, but it's the right thing to do. It sure helps to justify it when you get a little financial help."

Clean Water Funds from the SWCD and a Chisago Lakes Lake Improvement District (LID) grant covered about 70% of that \$4,560 cost.

When it came to expanding no-till, Gustafson was already convinced by his 2019 experience.

"It gets more and more challenging every year from a weather standpoint to get the crop in, and they always

emphasize the importance of early planting. I thought about the amount of time that's required for the multiple tillage passes — and the fact that sometimes that can delay you if you work the ground, and then you end up getting a rain ... that can slow you up," Gustafson said. "I believe that the water infiltration is significantly better with the no-till."

As his agronomist had predicted, no-till helped to minimize weed pressure because the seeds on top of the soil aren't being incorporated.

His 2019 corn and soybean yields were comparable to

neighbors' — lower than average, but attributed to the wet growing season. Gustafson said "operator error" contributed to 2020's slight yield drag, which was still comparable to neighbors' — soybeans averaged 50 bushels an acre, corn averaged 199 bushels an acre.

"No-till does a lot better than conventional tillage in years like (2021's drought) because that soil is covered and you're conserving that moisture within the soil profile. So the plants have a little bit more moisture than a field that's completely tilled," Hermel said.

In 2021, Gustafson's soybean crop averaged 61 bushels an acre; corn averaged 190 bushels an acre.

"My crops last year, even with the limited moisture, were fantastic. The corn was near my all-time best, and was certainly impacted by the low rainfall. The soybean yields were the best I have ever raised," Gustafson said. "When I thought we were really getting dry, I dug a hole and was surprised to see the topsoil still had moisture."

He attributed the yields to moisture preservation and to changes in his fertilizer program.

"He's always willing to learn and try to understand and improve his soil," Hermel said. "I think Max has done his research and he knew that this (no-till) was what he needed to do for soil quality and for his own farm and his own fields."



Natural Resources Conservation Service

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