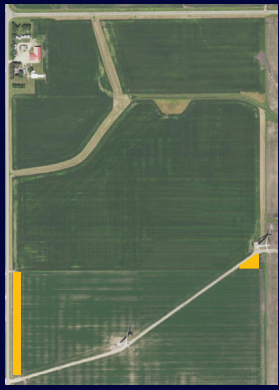


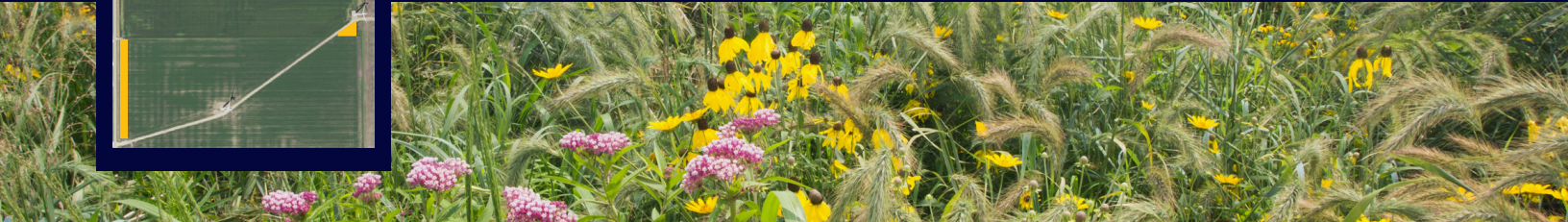
PRAIRIE STRIPS: THE DEWALL FARM

Case Study 03 • The Tallgrass Prairie Center



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THE DEWALL FARM

Wayne DeWall farms 640 acres of prime corn and soybean ground in southern Minnesota near Grand Meadow in Mower County. The setting is familiar: fields that carry a rotation of corn and beans, red barns, white machine sheds, and wind turbines that dot a relatively flat landscape. A deeper look, however, reveals a commitment to implementing conservation practices and monitoring the results to improve his operation. Prairie strips are one such practice. Others include analyzing water quality, measuring runoff, and conducting experiments on fertilizer application.

Farming in the DeWall family goes back generations, with ancestors owning and farming land in both Iowa and Minnesota. Wayne's grandfather and two of his younger brothers farmed together before they eventually moved away. During his childhood, Wayne remembers having dairy cows, hogs, and chickens. Over time, the focus turned to row

cropping with some beef cattle as Wayne and his father split the work. Now, Wayne and his wife raise row crops and also run a yearly craft show on the farm called Creative Country Crafts.

Wayne's participation in the Root River Field to Stream Partnership is evidence for the need for strong, lasting relationships between farmers, conservation professionals, and researchers. The group's goal is to "conduct intensive surface and groundwater monitoring at multiple scales in order to provide an assessment of the amount and sources of nutrients and sediment delivered to the watershed outlet and also to determine the effectiveness of agricultural conservation practices." Monitoring has been ongoing since 2011.



EXPLORING PRAIRIE STRIPS

A key connection made through the program has been between Wayne and Kevin Kuehner, who works for the Minnesota Department of Agriculture. It was Kevin who suggested putting in a prairie strip to address runoff after excessive rainfall events that Wayne was seeing on his farm. Wayne says that the strip is, "basically a good way to stop it [runoff] or slow it down, so it works great for what we need it for." Research conducted by the Iowa State University STRIPS (Science Based Trials of Rowcrops Integrated with Prairie Strips) shows that converting 10% of a crop-field to native, perennial vegetation can reduce sediment movement by 95%.

Wayne enrolled in the Conservation Reserve Program (CRP) at his local Natural Resources Conservation Service (NRCS) office to obtain cost share for planting the prairie and to qualify for yearly rental payments. Technically, his prairie strips are categorized as Pollinator Habitat (CP-42), since he enrolled prior to the adoption of the Prairie Strips (CP-43) practice. The seed mix included both native grasses and forbs designed to maximize ecosystem services (erosion control, nutrient reduction, infiltration) and offer habitat for pollinators. Flowers like black-eyed susan work alongside hardy grasses such as big bluestem to provide multiple ecosystem services, ranging from aesthetic beauty and pollinator habitat to improved soil quality and nutrient retention.



According to a study conducted by Iowa State University at the Neal Smith National Wildlife Refuge, converting 10% of a row-cropped field to perennial prairie can reduce sediment loss by 95%, phosphorus by 90%, and nitrogen loss by nearly 85%.

INSTALLATION AND MAINTENANCE

The strip is located at the easternmost edge of the farm. Wayne hired a contractor who used a native seed drill to plant it. Like all prairie plantings, patience is key in the first few years as the early results are often, as Wayne described it, “pretty ugly.” Wayne used a batwing mower the first and second years to mow down the strips twice in both establishment years. Mowing aids in suppressing weeds and enhancing native plant establishment. Wayne emphasizes patience and persistence with maintenance, “Year one, that looked pretty ugly. Of course, after you clipped it, it looked fine. Year two looked better. You can start seeing more of the forbs coming, more of the flowers. It was something else.”

Happy with his first foray into prairie strips, Wayne decided to plant two more prairie strips. This time enrolling in the CP-43 prairie strip practice, he had more flexibility on where to plant them, opting to place both again at the edge of his fields. The larger one is similar to the first strip, placed on the western edge of his field. The other is a triangular shape in the southeast corner that is separated from the rest of the acres due to an access road for a wind turbine. Wayne enlisted his neighbor to plant these strips with a grain drill, passing over the seedbed several times to get the smallest forb seeds to pass through and to distribute them evenly. Early results of these plantings appear to be promising. [The TPC doesn’t recommend seed drills to plant prairie due to the small size of prairie seed and the tendency of grain drill to plant it too deep.

OUTCOMES

Wayne is pleased with how his prairie strips turned out, using words like “fantastic” to describe the work it’s done to curtail erosion and the aesthetic beauty it has added to the farm. In regards to erosion control, “It’s stopped the sediment right away. Before they used a squeegee to clean out the flume, a device Wayne installed at the edge of his field to measure soil movement. Now it’s always clean. That shows you right there, it’s doing what it’s supposed to be doing.” Another outcome of installing prairie strips has been

furthering the collaboration with conservation professionals like Kevin Kuehner. These partnerships allow farmers like Wayne to be, “A part of the good science,” as he puts it. A final consideration: NRCS cooperation. Not all offices may be as knowledgeable and accommodating with a new practice. Having an idea of what you want to do before talking with the NRCS or FSA can help achieve your goals.

WILL PRAIRIE PLUG MY TILE?

Farmers like Wayne have partnered with the TPC to have us inspect their tile with a camera. Most of the time, tile camera videos under prairie strips look like the image below.

Root infiltration under prairie is similar to corn roots and cover crops. However, managing the prairie for woody vegetation over the long-term is important, as those species can cause issues with tile plugging.



FARM FACTS

Location – Mower County, MN

Owners – Wayne DeWall

Farm Operator – Wayne DeWall

Total Acres – 640

Crops – Corn, soybeans

Acres in Conservation – 4.34

Conservation Practices – Prairie strips, grass waterways

COSTS OF ESTABLISHING PRAIRIE STRIPS

Practice	Actual Costs for Case Study	Estimated Range of Costs
Tillage	Done by Wayne prior to planting field to corn	\$9.00-\$20.00/acre ⁴
Herbicide	None required	\$12.00-\$35.00/acre ⁴
Nurse Crop Seed	N/A	\$10.00-\$50.00/acre ¹
Nurse Crop Seeding	N/A	\$5.00-\$13.00/acre ⁴
Native Seed	\$220.40	\$150+acre ²
Native Seed Drilling	Contracted out	\$25.00-42.00/acre ⁴
Establishment Mowings (2x)	Done by DeWall	\$10.00-28.00/acre ⁴
Spot Mowings (2x)	Done by DeWall	\$20.00-100.00/hr ⁴
Prescribed Burn	N/A	\$20.00-\$65.00/acre ⁴

¹USDA SARE, “Creating a Baseline for Cover Crop Costs and Returns,” 2019.

²Tallgrass Prairie Seed Calculator, University of Northern Iowa, <http://tallgrassprairieseedcalculator.com/>.

³ “Cash Rental Rates for Iowa 2021 Survey,” Iowa State University.

⁴“2021 Custom Rate Survey,” Iowa State University.

FINANCIAL INFORMATION

The table uses actual costs from the case study as well as estimated costs using Iowa State’s “2021 Iowa Farm Custom Rate Survey.” Costs can vary considerably due to contractor and machinery availability, site conditions (size, shape, crops) and timing. The cost of seed is largely influenced by species composition and availability. A pollinator mix, in general, will be more expensive than a seed mix that is a 50:50 grass to forb ratio.

Wayne’s prairie strips have not yet been burned. The cost of prescribed burns is especially variable for strips. While burning is a best management practice, mowing and haying prairie are legitimate alternatives.

A NOTE ON SEED MIXES

The cost of native seed is largely influenced by species composition and availability. In particular, abundance of forb seeds in the mix is typically responsible for most of the price. For example, a pollinator mix will be more expensive than a seed mix that is a 50:50 grass to forb ratio. There are many seed mixes marketed for CRP practices at the time of this publication that are significantly lower in price than the listed range of costs. The range of costs provided are based on field-tested seed mix designs that result in multifunctional, diverse stands of tallgrass prairie.

Use of low-cost seed mixes may not result in outcomes similar to this case study, though more research is needed. For more TPC research regarding the importance of seed mix design, see Meissen et al. 2020⁵.

⁵Meissen JC, Glidden AJ, Sherrard ME, Elgersma KJ, Jackson LL. 2020. Seed mix design and first year management influence multifunctionality and cost-effectiveness in prairie reconstruction. *Restoration Ecology*. 28:807–816. doi: <https://doi.org/10.1111/rec.13013>.

Field Day held at the DeWall farm, 2021.



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PRAIRIE STRIPS CASE STUDIES

For more information, contact Andy Olson at the Tallgrass Prairie Center at 319-273- 3828 or visit tallgrassprairiecenter.org