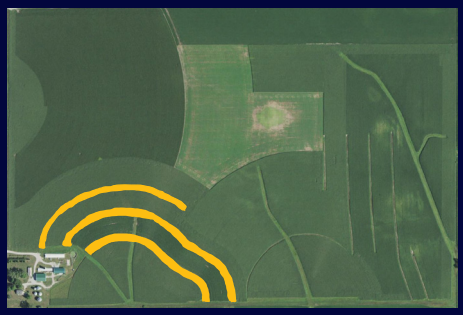
PRAIRIE STRIPS: THE SLOAN FARM

Case Study 04• The Tallgrass Prairie Center



Tallgrass Prairie CENTER

UNI University of Northern Iowa

THE SLOAN FARM

Dick Sloan owns and operates a 520 acre farm near Rowley, Iowa, in the Cedar River watershed. Even with a corn suitability rating in the mid-80s, he has identified several ways to successfully incorporate prairie into his operation. He says that, “highly productive farms now, and in the future, are built around systems which protect native species... Farming is so much more than maximizing today’s production of corn and soybeans.” His curiosity about how to improve both his farm and the environmental health of his local community is a key to Dick’s outlook on prairie strips.

Growing up on the farm that his grandfather purchased in 1938, Dick absorbed a land ethic centered around sustainable practices. He saw his father rotate oats and alfalfa with row crops and raised cattle and pigs. He also installed grass waterways and practiced conservation tillage. Dick returned home to farm in 1978 after he received a degree in biology from Iowa State University. As he took more ownership over the farm, Dick got out of the cattle business and simplified the operation towards corn, soybeans, and pigs, before reintroducing small grains back into the rotation, such as winter rye. Today, Dick continues to experiment with his farm practices to achieve results that benefits both the sustained profitability of his farm and the continued conservation of the land.

PUTTING IDEAS INTO PRACTICE

Sloan learned about prairie strips during a visit to Leopold Center for Sustainable Agriculture at Iowa State University in 2011. At that point, research on their efficacy had primarily only been done at the Neal Smith National Wildlife Refuge. That research pointed to disproportionately beneficial results when row-cropped fields were converted to 10% native, perennial vegetation. So Dick thought, “Well, okay, but who’s doing this?” Dick decided that he would give prairie strips a shot on his farm to take an idea developed by academics and implement it on an active farm operation.

Dick planned and planted his prairie strips in 2011 and 2012. He credits his established relationship with his local conservation offices for making the process of receiving Conservation Reserve Program (CRP) payments and cost-share possible. (The formal adoption of prairie strips as a CRP practice (CP43) was many years down the road.) He purchased the seed through Pheasants Forever, a mix designed to meet the specifications of CP-25 (Restoration of Rare and Declining Habitat). It consisted of 29 native species of grasses and forbs, such as big bluestem and prairie dropseed. Since then, he’s seen four additional native species in the prairie despite not directly planting them.

The aerial view of the farm shows how laying out the strips on the contours makes for a unique field. Dick made sure to space them correctly as to not interfere with farm operations, such as planting and harvesting. He hired the Buchanan County Conservation Board to drill-seed his prairie strips. Dick utilized his own equipment and labor to do establishment mowing and other maintenance, such as treating tree saplings with herbicide to keep woody species from taking over his prairie. He worked with the ISU STRIPS team to help burn his prairie strips once they were established.

According to a study conducted by Iowa State University at the Neal Smith National Wildlife Reserve, 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%.

JUST ONE TOOL OF MANY

Dick doesn't solely rely on prairie strips to achieve his conservation goals on his farm. Other practices he utilizes include no-till farming, terraces, waterways, and cover crops. He is also implementing a substantial wetland restoration. Working with the Iowa Department of Agriculture and Land Stewardship (IDALS), the wetland will have a seven-acre permanent pool and a buffer of native, perennial vegetation to contain surges from heavy rainfall. The total conservation easement is nearly 30 acres.

In addition to his full-time job as a farmer, Dick is a leader in farmer-led research, working with Iowa State University STRIPS, Iowa Learning Farms, the Tallgrass Prairie Center, and Practical Farmers of Iowa (PFI). With PFI, he has been involved with research on cover crops and hosted on-farm field days. He is also involved in the Cedar River Watershed Coalition and served as chairman of the Lime Creek Watershed Council, where he worked within his community to encourage more residents to adopt management practices that would lead to improved water quality.

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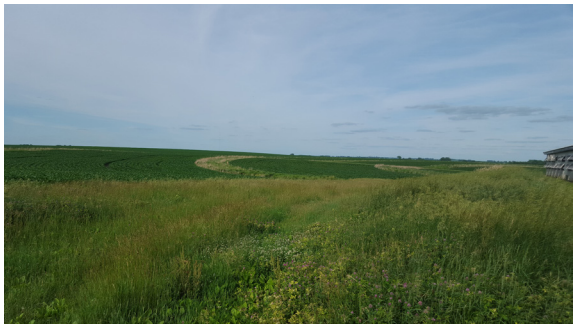


OUTCOMES

Soil health is one of the key measures of success on Dick's farm. He compares prairie strips to a bank where, "You have a diverse, healthy ecosystem operating that provides a basis for beneficial insects to be able to thrive in your fields." In addition to the beneficial insects, he appreciates the habitat and aesthetic beauty the prairie adds to his farm. He's seen Upland Sandpiper on the farm for several years now. Dick's advice for others looking to implement prairie strips? "You have to learn how to manage it. You need to know what to look out for. Maybe it scares you at first but you figure it out."

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. 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 on cost-minimizing rather than ecosystem service maximizing seed mix designs. For more TPC research regarding the importance of seed mix design, see Meissen et al. 2020[5].

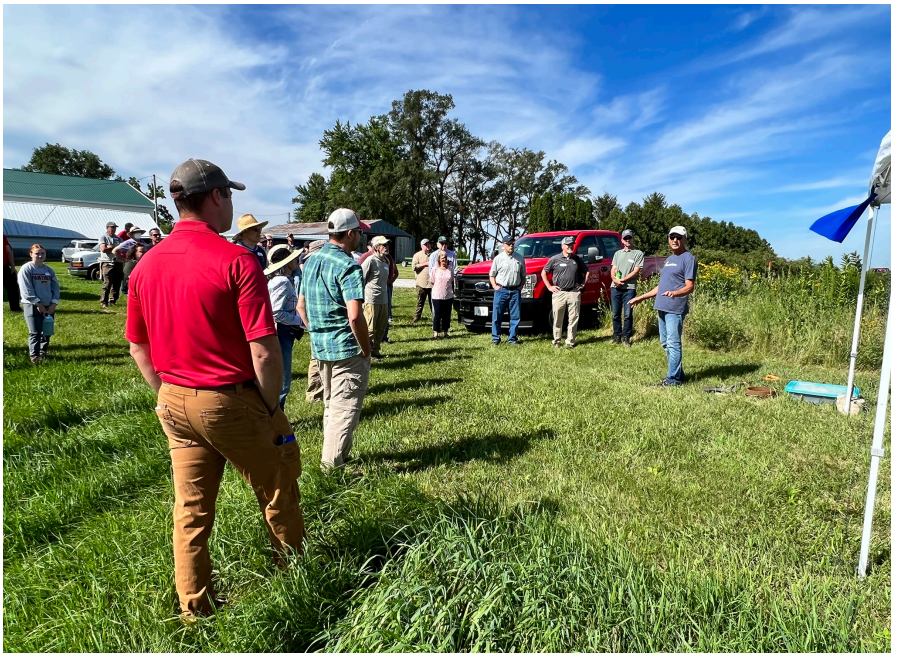
[5]Meissen JC, Glidden AJ, Sherrard ME, Elgersma KJ, Jackson LL. 2020. Seed mix design and first year management influence multifunctionality and cost-effectiveness in prairie reconstruction. Restoration Ecology. 28:807–816. doi:https://doi.org/10.1111/rec.13013.

ASSISTANCE FOR PRAIRIE STRIPS

Most installation costs are eligible for up to 50% cost share through the USDA's Conservation Reserve Program. CRP annual rental payments can be 85-90% of cash rental rates. The average CRP payment for Buchanan County in 2023 was $253/acre. (USDA, Farm Service Agency, "Public CRP 2023 County Average SRRs"). See your County Office for details.

FARM FACTS

Location – Buchanan County, Iowa
Owners – Dick Sloan
Farm Operator – Dick Sloan
Total Acres – 520
Crops – Corn, soybeans
Acres in Conservation – 4.5
Conservation Practices – Prairie strips, grass waterways, cover crops, conservation tillage, permanent pool

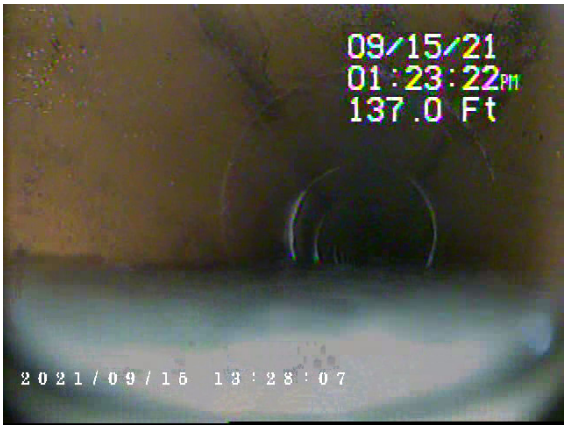


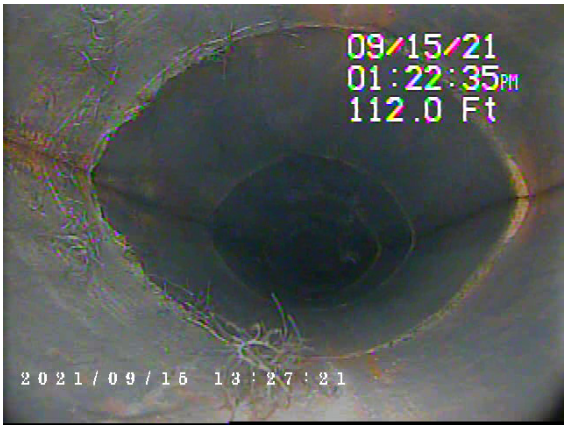
"Highly productive farms now, and in the future, are built around systems which protect native species... Farming is so much more than maximizing today's production of corn and soybeans."

WILL PRAIRIE PLUG MY TILE?

One question inquisitive farmers like Dick often ask is, "will prairie strips plug my tile?" To help answer this question, he has installed a stand pipe to access a tile that runs under one of his fields and a prairie strip. The Tallgrass Prairie Center has captured footage with a tile camera since 2018.

There is no evidence that prairie species plug field tile. Root infiltration under prairie is similar to the adjacent corn and cover crops. However, managing the prairie for woody vegetation over the long-term is important, as the roots of some trees and willows can show up in tile lines.





COSTS OF ESTABLISHING PRAIRIE STRIPS

Installation costs	Actual Costs	Estimated Costs
Tillage	N/A	$9.00-$20.00/acre[4]
Herbicide	N/A	$16.00-$45.00/acre[4]
Cover Crop Seed	N/A	$5.00-$50.00[1]
Cover Crop Seeding	N/A	$10.00-$30.00/acre
Native Seed	$91.50/acre	$150+acre[3]
Native Seed Drilling	$125 total	$43.00-$62.00/acre[5]
Establishment Mowings (2x)	Own equipment	$10.00-58.00/acre[4]
Spot Mowings (2x)	Own equipment	$50.00-140.00/hr[4]
Prescribed Burn	Done by Sloan	$50.00-$94.00/acre[5]
Opportunity Costs (cash rent)		Cash rent, $230-$345/ac[3]

[1]USDA SARE, "Creating a Baseline for Cover Crop Costs and Returns," 2019.

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

[3]"Cash Rental Rates for Iowa 2023 Survey," Iowa State University.

[4]"2023 Custom Rate Survey," Iowa State University.

[5]"2022 Prairie Services Custom Rate Survey", Tallgrass Prairie Center.

SLOAN FARM FINANCIALS

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.

The cost of prescribed burns is especially variable for strips. While burning is a best management practice, mowing and haying prairie are legitimate alternatives.

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USDA United States Department of Agriculture National Institute of Food and Agriculture

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