

Dane Demo Farms

The official newsletter of the Dane Demonstration Farm Network

Volume 1, Issue 1



Cover crop with low disturbance manure injection

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Check out our website at:

demofarms.countyofdane.com

Demonstration Farms to Provide On-Farm Research

The Dane Demonstration Farm Network, known as Dane Demo Farms, kicked off at the beginning of 2023. Dane County signed on to a five-year cooperative agreement with the USDA-Natural Resources Conservation Service to help establish the new program. After Dane County Land Conservation Division acquired a staff member to manage the program, they began the search for innovative farmers across the county. With a goal of five farms, the network currently has three farms that have agreed to participate (learn more about these farms on pages 2-3).

The network of farms will conduct on-farm research to test current and innovative conservation systems. Dane Demo Farms will provide learning opportunities including tours and fields days for farmers, agribusiness, farmer-led watershed groups, natural resources agencies and others, as well as facilitate farmer-to-farmer learning.

Research is focused on conservation practices that help protect local water quality and build soil health, with research projects that are designed to answer specific questions farmers have regarding crop management and economics (learn more about the research on page 3). A number of the participating farms will also have edge-of field monitoring stations installed to help quantify the real world surface water quality impacts of the tested conservation practices.

Meet the Dane Demo Farms Farmers

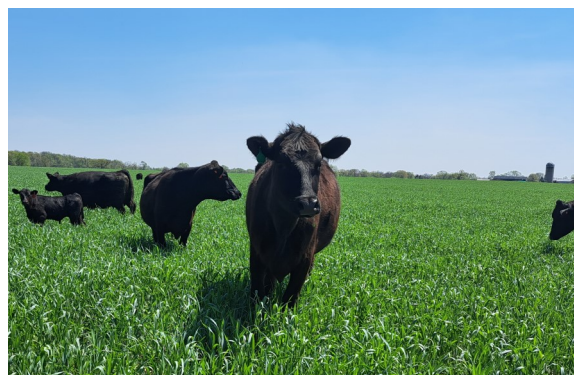
Farms were targeted based on feedback from agronomy professionals across the County, and Dane County Land Conservation staff. Farmers that participate in the Dane Demo Farms have taken the lead on implementing innovative conservation practices on their cropland and have found success in doing so.

Bruce & Karl Sime, Stoughton

Bruce and Karl are a father-son farming duo that demonstrate how two generations with very different ideas can work together. They farm just west of Stoughton in the Badfish Creek-Yahara River watershed. The Simes helped start up a farmer-led watershed group south of Madison called the Biological Farmer Friends. Just as the farmer group name implies, the Simes have prioritized soil health on their cropland, by eliminating tillage, adding cover crops, and integrating livestock into their cropping system. They farm over 650 acres and grow corn, soybeans, wheat, and managed pasture. They raise pastured and confined beef and pastured cow-calf pairs, and compost all of the manure that they collect. With their herd management expertise and Karl's mechanical know-how and YouTube watching skills, they make an innovative team. They are interested in a wide array of research, some ideas include researching how lime moves through the soil profile in a no-till cover crop system, and how to best apply nitrogen when planting green to avoid tie-up.



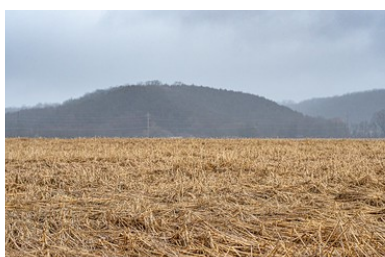
Bruce and Karl Sime, photo credit Agri-View



The Sime cattle grazing on rye cover crop



Tom Ripp



Oat cover crop in spring

Tom Ripp, Black Earth

Tom farms around 350 acres of corn, soybeans, and wheat in the Black Earth Creek watershed. He's a long-time no-till farmer and has been incorporating cover crops into his cropping system for over ten years. He attributes his innovative thinking to his dad Don, who started no-till farming over 40 years ago. Tom has continued the no-till tradition and expanded it to the low-lying acres he farms along Black Earth Creek. In more recent years, Tom became interested in soil health and experimented with different cover crops to find what works best on his farm. He is constantly striving to improve his soils while keeping a close check on the economics. Tom has put a lot of thought and time into modifying his equipment to ensure it works with his system. Tom hasn't worked with the County very much in the past, but after a number of calls, visits, and maybe one twist of the arm, Dane Demo Farms was able to convince him to participate. Tom is interested in research around nutrient stratification and how cover crops effect nutrient availability. He also plans to try out different ways of terminating cover crops, including crimping in tandem with herbicides.

Meet the Dane Demo Farms Farmers (continued from page 2)

Endres Berryridge Farm, Waunakee

Brothers Steve, Jeff, and Randy, along with the next generation of Sarah and Zac, make up Endres Berryridge Farm. The Endres' operate a dairy farm northwest of Waunakee in the Six Mile Creek-Yahara River watershed. They farm 1,500 acres of cropland and raise a medium sized herd of registered Holsteins. The Endres' grow corn, alfalfa, wheat, and grass hay. They incorporate cover crops into their cropping system and have tried a variety of tillage options, including no-till and strip-till. Manure management on the farm is also varied, including a composting operation, liquid and solid manures that are digested at community digesters, and the reuse of manure solids for bedding. The Endres' have been involved with farmer-led conservation efforts for over a decade, with Jeff serving as President of the Yahara Pride Farms farmer-led watershed group since the inception in 2011. The Endres' are interested in a variety of research including compost nutrient cycling and availability, nitrogen management with cover crops and strip till, among others. Jeff hopes that the data collected through the demo farm collaboration will help answer many of the questions farmers in the area have regarding conservation practice implementation.



The Endres' manure compost facility



No-till alfalfa seeding into cereal rye

Research Plans in the Works

Over the past few months, the research team met with each Demo Farm to gather information on their cropping practices and hear what research the farms are interested in. Research topics included soil health, nutrient cycling and lime movement by cover crops, mineralization of cover crops, timing of cover crop termination, nitrogen application strategies when planting green, nutrient availability from compost, grazing cover crops economics, and more.

The research team went to the drawing table and began creating research plans to meet the farm needs. Many of the projects will be installed in strips on the demo farms for ease of implementation by the farmers, with replications of the research occurring across farms. These strips will also provide opportunities during upcoming field days.

Dr. Francisco Arriaga, UW-Madison Soil Extension Specialist/Faculty, is supporting the research and will be connecting two graduate students to the project. Students will complete the necessary sample collection and analysis, as well as provide final data analysis. (continued on page 4)

Research Plans in the Works (cont)

More details on specific research projects will be shared in future newsletters, as well as upcoming field days and tours.

The Research Team:

University of Wisconsin Madison, Division of Extension: Dr. Francisco Arriaga, Soil Extension Specialist/
Faculty, Chelsea Zegler, Ag and Water Quality Educator, Will Fulwider, Regional Crops and Soils Educator, and
Kevin Shelley, Outreach Program Manager with UW-Madison

USDA-NRCS: Brooke Lerum, Resources Conservationist

Dane County LWRD: Amy Piaget, County Conservationist, and Kim Meyer, Agronomist

If you'd like to stay in the loop, sign up for our newsletter and/or text service on our website. The text service will send you a text when there is field day or tour happening in your neighborhood.

A Word From Extension

Increasing crop resilience to drought (and wet years) through soil organic matter and aggregation

Will Fulwider, UW Extension Crops and Soil Educator

Only in 1988 did southern Wisconsin see less rainfall in May and June than the ~2.7 inches we've been left to contend with this year. While we got some much needed rains in July, farmers can still feel it and see it in their crops: high variability in crops planted the latter half of May, and signs of drought stress—leaf rolling and graying in corn and leaf flipping and diminished vegetative growth in soybeans—are widespread. If you're not irrigating, there are few things farmers can do in season during drought other than minimize soil disturbance that would release more soil moisture and hope it rains.



Will Fulwider

Hindsight is 20/20, but looking back what could we have done to improve our position in this flash drought? Plant while we still had moisture in the upper soil layers? Yes. Terminate cover crops early? Probably. Increase residue on the soil to reduce evaporation? Definitely. While all these strategies would have put us in a better position this year, there's not a flash drought every year, and early planting and early cover crop termination would likely hurt crops in a wet year. While this adaptive management is important, you can't predict with any degree of certainty what precipitation will look like a month down the road from planting. Luckily there is one thing we can do to improve our odds in both dry and wet years, which is to increase our soils' ability to receive and store moisture. (continued on page 5)

A Word from Extension (cont.)

Conservation practices are water conservation practices

Two key components that help soil take in and hold onto water are soil organic matter and soil aggregation (to what extent is your soil like a miniature kid's ball pit). Water and soil organic matter hang out in the pore space created between soil aggregates (the soil balls in question). The soil then acts like a sponge, readily soaking up water when it falls and making it accessible to plants as slow release.

Conservation practices like cover crops and reduced tillage work in tandem to maintain or even increase soil organic matter and soil aggregation, and therefore, soil sponginess. These cover crops take CO₂ from the atmosphere and pump it into the soil in the form of root exudates—which feeds microbes and fungi, which die and add their mass to the organic matter pool—and as they decompose after termination. The roots create and leave channels to guide water deeper into the soil and the root exudates work like a glue to mold more little soil balls, and therefore create more pore space for water. All this space-making in the soil also makes it easier for crop roots to grow deeper, accessing moisture trapped deep in the soil. Cover crops also extend the CO₂ pumping (aka growing) season for our croplands by several more months, increasing total organic matter inputs.

While cover crops turn up the organic matter pump, reduced tillage helps to keep the pump from leaking by maintaining soil structure. Tillage breaks apart the soil aggregates (popping the balls of our miniature ball pit), thereby collapsing the pore space where the water and soil carbon are hanging out. While this collapse releases nutrients held by the soil organic matter to the crops, you're drawing on a finite resource as the organic matter is metabolized by microbes and leaked back to the atmosphere as CO₂. This also squeezes out the water, moving moisture out of the soil and reducing its capacity to store that water, which is pretty critical in dry times like these.

In it for the long haul

Rome wasn't built in a day, and soils certainly don't gain organic matter in one either. Adaptive management of conservation practices will help us meet short-term crop needs as well as maintain the path towards long-term increases in soil water capacity through soil aggregation and organic matter accumulation.

For more detailed information on conservation practices' effect on soil organic matter, and in turn, soil organic carbon, check out the article, ["How much do soil health practices increase soil carbon"](https://cropsandsoils.extension.wisc.edu/) on the UW-Madison Extension Crops and Soils webpage. <https://cropsandsoils.extension.wisc.edu/>

Interested in participating as a Dane Demo Farm?

Please reach out to the contacts listed on the back of this newsletter.

Events:

Manure Composting Field Day

September 12, 2023 at 9:30 am to 1:00 pm at the Sime Farm
1192 Starr School Rd, Stoughton WI, register by email, wfulwider@wisc.edu

Dane Demo Farms Kickoff

September 15, 2023 at 11:00 am to 11:30 am at the Sime Farm
1192 Starr School Rd, Stoughton WI, no registration required



Program Contact Information

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Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE

Dane Demo Farms

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