

Today's Farm

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**For those who live & farm in
Southwest Minnesota & Northwest Iowa**



JULIE BUNTJER/DAILY GLOBE

Flying low over a corn field Sept. 5, a pilot drops a mixture of cover crop seed on a field near Sioux Valley.

Cover crop curiosity

Farmers look to reduce erosion, improve soil health over winter

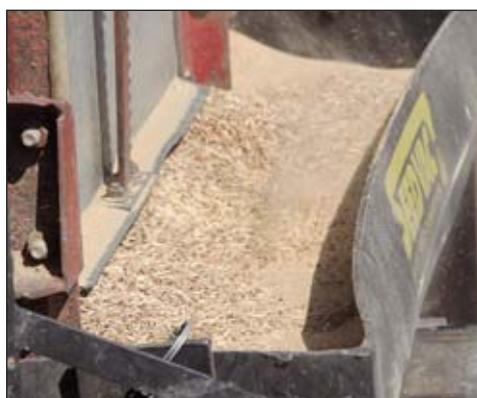
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LAKEFIELD — When Heron Lake Watershed District Technician Ross Behrends visited the Jerry and Nancy Ackermann farm this spring to test infiltration rates on areas where cover crops had grown, Jerry Ackermann had the proof he'd been looking for:

Land that had been planted with purple-topped turnips, radishes, cereal rye, oats and clover helped to break up the soil's hardpan, allowing an inch of water to soak into the soil in 30 seconds. When the second inch of water was added, it took 60 seconds to infiltrate.

Ackermann said they then went to a field where cover crops weren't planted. There, the first inch of water took three minutes to soak completely in; the second inch of water took six minutes.

It was a "big eye opener," said Ackermann, of rural Lakefield, who has seeded a portion of his row crop land in cover crops since the fall of 2011. On Sept. 5, he and several other farmers contracted with Steve Holmcek, a pilot with Fairmont Aviation, to seed a combined 550 acres of cropland with a mixture containing two differ-



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A seed mix including two types of radish, purple top turnip, clover, cereal rye and oats is vacuumed from a gravity wagon and blown into the airplane for aerial seeding.

ent types of radishes, purple-topped turnips, cereal rye, oats and clover. The aerial seeding was done over standing crops of corn and soybeans.

Moving northward

In recent years, a handful of farmers in

Jackson County, and about as many in Nobles County, have been learning about cover crops through trial and error. While widely accepted in the eastern Corn Belt — states like Illinois and Indiana — the practice is just starting to gain interest in Minnesota.

"Part of it is just promotion, part of it is that they have lower organic matter soils. They have a different growing season," said Jerry Perkins, of rural Worthington. He, along with the Ackermanns, are the beneficiaries of funding secured by the Heron Lake Watershed District in late August to further study the use of cover crops.

A \$7,300 National Wildlife Federation grant was awarded to the HLWD to promote cover crop seeding. The grant helped fund Perkins' attendance at a two-day media training in Indianapolis, Ind., and will also be used to host a Cover Crops Field Day at the Ackermann site at 1 p.m. Nov. 13. During the event, speakers will talk about the effectiveness of cover crops, water quality benefits and the experiences of local landowners.

"We don't know a lot about cover crops in southern Minnesota," said HLWD Administrator Jan Voit. "Having these willing landowners helping us figure out how to make these cover crops viable is really important."

Voit said cover crops, while advantageous to farmers, are also a benefit to the watershed because they capture nutrients that might otherwise impact water quality.

"This has the opportunity to reduce runoff from erosion, help with infiltration and scavenging nutrients," she said. "Anything we can do, if we have willing landowners, we are always looking for that opportunity."

The HLWD has worked with the Ackermanns in the past, and this will be its third consecutive year hosting a Cover Crop Field Day. In each of the last two years, there was little to show. A lack of rain in the fall hampered cover crop growth. The farmers hope this year will be different.

Saving the soil

Nobles County Natural Resources Conservation Service (NRCS) District Conservationist Stephanie McLain said with the management practices used in crop production today, farmers need to take steps to cover the soil during the roughly seven months of the year when row crops are growing. It's during those winter months that wind and then spring rains can lead to soil erosion.

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"With water as important as it is, we need to help our soil hold every inch of water it can," she said. "We need to improve infiltration rates and improve organic matter."

With numerous cover crop options available, farmers are encouraged to choose seed or seed mixture that will most benefit their land, whether the goal is to break up soil compaction, prevent wind erosion or absorb excess nutrients in the soil.

"There are crops out there that look at reducing compaction by growing through that tillage layer or plow pan," McLain said, adding that the tillage radish and even sunflowers have a tap root that grows through those compacted layers to break up the soil.

"There are cover crops that will absorb that nitrogen — take up the nutrients so we don't lose them over winter," she explained. "As that breaks down after tillage, it becomes available for the next year's crop."

Then, there are crops like buckwheat, flax and sunflowers, all of which bloom and provide habitat for beneficial insects to survive.

Ackermann likes to plant the image tillage radish in his cover crop mix.

"It has a tap root that goes down 45 to 50 inches, with small, lateral hairs," he described, adding that the cover crop has been proven to kill overwintering soybean cyst nematodes.

With water as important as it is, we need to help our soil hold every inch of water it can.

Stephanie McLain
NRCS District Conservationist

"These cysts hatch and attach to the root hairs, but a radish is 96 percent water," Ackermann said. While the radish also soaks up the nitrogen in the soil, because its makeup is predominantly water, the nematodes essentially starve to death.

"When (the radish) dies, it gives off a gas, so if they (the nematodes) don't starve to death, the gas kills them," he explained.

McLain likes cover crops because of their ability to improve overall soil health.

"The more we try to add cover crops to our rotation, the better," she said.

She likened the use of cover crops, which feed the soil biology, to a soil microbe feedlot.

"The plants like having microbes around the root. They die there and the plants can take up those nutrients," McLain explained.

For farmers with a corn-soybean rotation, McLain said it can be tricky, but not impossible, to plant cover crops. She suggests they try planting cereal rye if they're

just starting out with cover crops.

"If it doesn't establish in the fall, it will establish in the spring," she said. "As long as they're OK with that and can till in the spring before planting soybeans, there's a benefit."

That benefit can be seen in just six weeks of growth, McLain said,

in both soil structure and infiltration.

"Our soils are able to do a lot of things — we need to give them more credit," she said. "They don't need us to till them all up. A lot of these organisms can do these things."

Singing the benefits

Of the farmers who had cover crops aerial seeded on their corn and soybean ground earlier this month, Ackermann has the largest test plot at 150 acres.

"I have no doubt there will be more next year, but we've got to pray for rain, that's the thing," he said. "What doesn't grow, it seems like it comes in the spring."

Even then, Ackermann notes a benefit.

"Most of the guys that are trying (cover crops), I tell them, let the cover crop do your tillage — it works," he said. "Plus, I like that it's going to pull up any nutrients that are left over."

Dave Christoffer, another three-year veteran of cover crop plantings, said he's noticed the soil where cover crops grew appears to be looser, and fewer weeds emerge.

"I noticed the lambsquarter doesn't show up on (Ackermann's) land," he said with a laugh. "The rye has some good weed control properties."

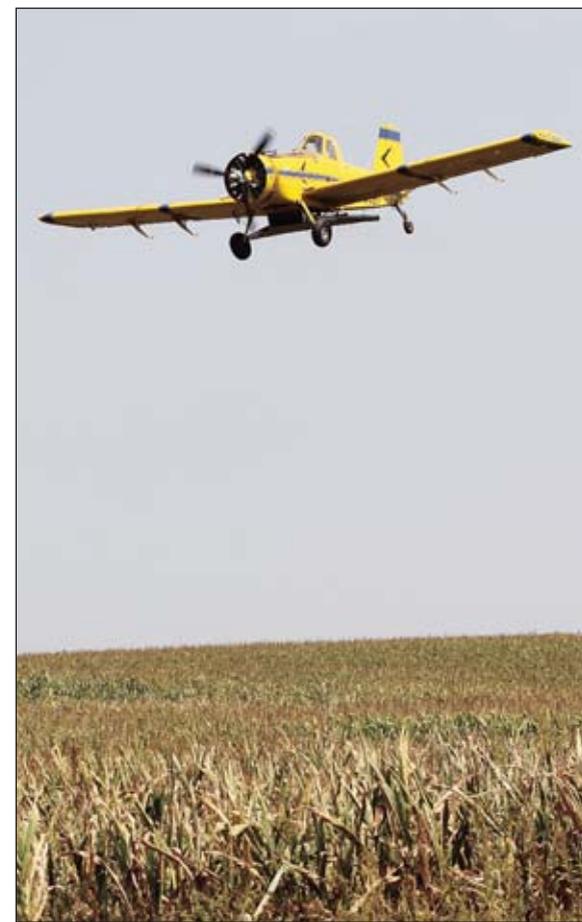
Christoffer plants cover crops because of his interest in soil conservation, and because he'd heard about the benefits of building microbes in the soil.

"We try to be good stewards of the soil," he said.

Brian Post planted cover crops on about 50 acres this year. It's the second time he's tried aerial seeding and he hopes to be able to use the cover crops for grazing if they grow this fall.

"We wanted to do that last year, but we didn't get much growth in the fall," he said.

Planting cover crops with the intent of utilizing it for cattle grazing was what first lured



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An airplane drops seed over a corn field Sept. 5 near Sioux Valley. The cover crop seed, once it grows, will soak up nutrients left in the soil and break up soil compaction.

Tim Hansberger, of rural Worthington, to try seeding annual ryegrass four years ago.

"Our hope was that if we could chop silage in early September, we'd spread annual ryegrass on with fertilizer and lightly incorporate it," Hansberger explained. "The hope was that we could get something to cover the soil and prevent any erosion from happening that fall or early spring."

COVER CROPS, D18



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The pilot watches as cover crop seed is blown into his airplane using a seed vac system.



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Jeff Rogers seeds winter rye, hairy vetch and tillage radish seed Sept. 13 on property owned by the Okabena-Ocheda Watershed District near Worthington.

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COVER CROPS

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In his first two years seeding cover crops, Hansberger said his attempts failed due to dry weather in September.

"By the time the ryegrass germinated, you could barely see a little green in the field and then we'd have a killing frost," he said.

While the Hansbergers no longer feed cattle, his interest in cover crops hasn't waned.

"It's something that I find interesting — the biggest hurdle is getting it established," he said.

Earlier this month, he aerial-seeded a blend of cereal rye, oats and radishes on a 50-acre parcel that is tiled, but there are still issues with surface water moving through during rain events.

"The oats, if they get established, will hold the soil in place," Hansberger said, adding that he hopes the radishes will help address soil compaction issues that are also present.

"The interesting thing with cover crops, depending on what type of blend you put together, you can accomplish a lot of different things," he said. "I've been approaching cover crops more from the standpoint of soil erosion — protecting the soil."

Finding a way

Perkins, who seeded his first cover crop about 20 years ago, experimented at that time because he was growing small grains in his rotation. Once he moved to a corn-soybean rotation, it became more difficult to seed in a cover crop. So he stopped trying.

Then, in 2011, he joined Ackermann to once again test the use of cover crops. This time, they're trying to determine the best way to get the seeds planted.

"We're just getting started," Perkins said. "We've got a lot to learn, and we need research to help us out on this."

While Perkins, Ackermann and several other area farmers had their cover crops planted by aerial seeding earlier this month, it isn't the only option.

On Sept. 13, the Okabena-Ocheda Watershed District used a seeder to directly incorporate winter wheat, hairy vetch and tillage radish seeds into a field where small grains were harvested just a few weeks earlier.

Its plan is use the 24-acre parcel on the outskirts of Worthington as a demonstration project to show farmers the potential cover crops have to improve soil health.

Those who plant small grains or harvest corn for silage have better opportunity to seed cover crops because they can get into the field after the crop has been harvested.

As some of the more seasoned cover crop growers have learned, getting in to plant the cover crops is one of the greatest challenges.

"Aerial spraying is always when you like to be seeding your cover crops," Ackermann said, adding that Hagie Manufacturing, a Clarion, Iowa-based company that makes high-boy sprayers, is working on a model with an air system to seed cover crops into standing corn and bean fields. He has also talked to AGCO-Jackson Operations about the potential to convert its Ro-Gator to seed cover crops, but the machine isn't high enough off the ground to maneuver over the height of a mid-August corn stand.

Grants, programs available

While the National Wildlife Federation grant awarded to the Heron Lake Watershed District is helping the Ackermanns and the Perkins with their cover crop projects, there are other sources available to help farmers finance a project of their own.

Incentives are available through the Conservation Security Program, and the Natural Resources Con-

servation Service has funding available through the Environmental Quality Incentive Program (EQIP).

Through EQIP, area NRCS offices can sign interested farmers up for the Soil Health Initiative, which requires cover crops be grown longer term — a minimum of five years, with the planting done on the same land each of those years.

McLain said those projects typically are 35 to 40 acres in size.

"We evaluate the site every year," she said, adding that data is collected on infiltration rates, soil temperature, soil microbial health and soil structure.

"Some of the things farmers have seen is that infiltration rates double or triple in the field," she said. "The amount of water the soil can take in ... is considerable."

Soil deemed to have good structure holds together, McLain said, adding that earthworm holes can be visible in the soil. In soil where the structure is broken down, the dirt crumbles into powder in a person's hand.

In addition to improving soil structure, McLain said cover crops help to keep soil temperatures lowered, which benefits the soil microbes and reduces stress on the growing plants.

Through the Soil Health Initiative, McLain said the five-year program is a benefit in that it will provide farmers with better data on how cover crops can improve the soil.

"It takes a while for soil to regain its structure, to regain infiltration — to come back to those levels," she said. "It takes a while for organic matter to return."

McLain encourages anyone interested in learning more about cover crops and accessing program funding to contact an NRCS office for more information.

"It's too late for this year, but it's never too early to get in touch with us for next year," added Karen Boysen, Jackson County NRCS soil conservationist. She said cost-share can vary from year to year. This year, programs paid anywhere from \$53 to \$63 per acre for farmers willing to plant cover crops.

Daily Globe Reporter Julie Buntjer may be reached at 376-7330.



JULIE BUNTJER/DAILY GLOBE

Jeff Rogers pours cover crop seed into a seeder Sept. 13 on a small field on the edge of Worthington.