South Dakota Soil Health Coalition
10 Years & Growing

Soil Visions

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Website: sdsoilhealthcoalition.org
116 N Euclid Avenue Pierre, SD 57501
605-280-4190
Email: sdsoilhealth@gmail.com

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Building resilience with soil health

By Stan Wise

Resilience. It's one of the prizes that keeps conservation-minded land managers striving for improved soil health. Operational resilience in the face of floods, market fluctuations, rising input costs, extreme temperatures, and of course, drought. A healthy, functional soil can help a farm or ranch survive all of them.



Terry Ness explains his regenerative ag practices during a 2024 tour of his operation just east of Pierre, SD. SDSHC photo.

It's a concept that Terry Ness fully adopted in 1990 on his operation just east of Pierre, SD, and he's been devoted to it ever since.

Ness began farming in 1976, but his soil health journey began more than a decade later when he heard about the no-till research Dwayne Beck was conducting at the nearby Dakota Lakes Research Farm.

"I think there was an article in the Dakota Farmer that was all about (Beck) moving to Dakota Lakes, and as soon as I saw that article, I went down there because I knew I wasn't doing it the right way," Ness said. "I had never even heard of no-till before then."

Ness said he visited the research farm weekly to speak with Beck for a year and a half.

"It was after talking to him that I was brave enough to just jump in with both feet and get rid of my tillage equipment and get a no-till drill," he said. "And it worked really, really, really good with his guidance."

In addition to no-till practices, Ness adopted other principles of soil health by managing his crop residue to keep his soil covered, incorporating biodiversity by growing more than 30 different crops over the years, keeping living roots in the soil by growing cover crops, and grazing livestock on his cropland.

"I've never seen my sheep happier than when they're grazing on the cover crops," he said.

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A new program in SD offers on-farm pickup of winter camelina, opening avenues for relay cropping and improved soil health!

Learn more on Page 4!

Resilience — Continued from page 1

Building a legacy of resilience

Ness's efforts are paying off with improved soil health.

"When I started farming, my organic matter was a little more than one percent," Ness said. "All of the land that I've been (no-till) farming for 35 years is probably at an average of four percent right now."

With each one percent increase in soil organic matter, land can hold approximately 20,000 additional gallons of water per acre.

Six years ago, Ness dug a soil pit in a spot where he knew he had no topsoil when he started using no-till practices 36 years ago. He was surprised to discover he had six inches of topsoil in that spot. Five years later, he dug another soil pit right beside the first pit, and he found that he now had 8 inches of topsoil in that same area.

Ness has been able to significantly reduce the amount of fertilizer he applies to his crops. "When I first started, I was putting on 100 pounds of actual nitrogen and 60 pounds of phosphorus," he said. Six years ago he stopped applying the starter phosphorous and cut his nitrogen back to 50 pounds, and he has seen no negative effects.

Ness also noted that precipitation on his land stays on his land, even after intense rainfall events. "For 36 years, I've had zero runoff."

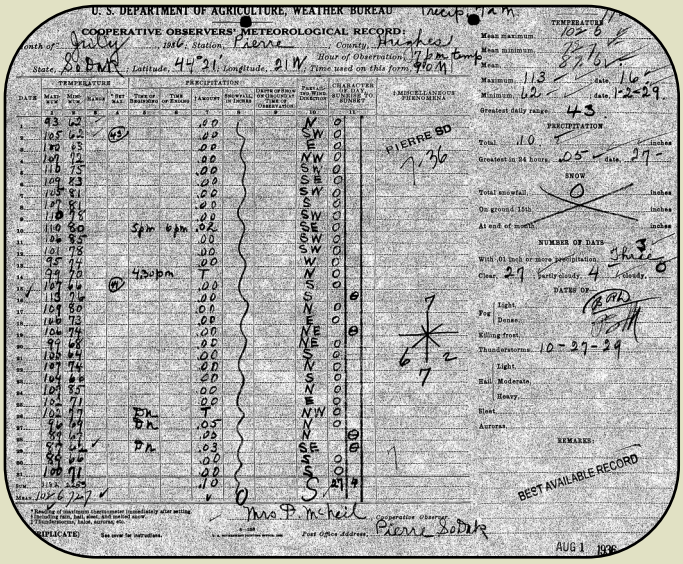
He said the water on his land infiltrates and recharges the soil profile, helping him to survive dry years without crop failures.

Surviving weather extremes

South Dakota knows what severe drought looks like. The worst drought in the state's history occurred during the 1930s. According to U.S. Department of Agriculture Weather Bureau data, Pierre received only a tenth of an inch of rain and only 8 days with high temperatures below 100 degrees F in July 1936, the height of the Dust Bowl.



In the Dust Bowl, poor land management practices combined with extreme drought conditions led to dust storms and severe soil erosion like that seen near Wolsey, SD, in 1935. SD Agricultural Heritage Museum, Hutton Collection, 2016 023 0043



Records kept by the U.S. Department of Agriculture Weather Bureau indicate that Pierre, SD, experienced only one tenth of an inch of rain and only eight days with high temperatures below 100 degrees F in July 1936. National Weather Service photo

National Weather Service data indicates that from 1934-1936 the Pierre Regional Airport, roughly 6 miles southwest of the Ness Farm, received roughly half of the 20.2 inches of annual precipitation that is currently considered the normal amount for the same location. According to the National Agricultural Statistics Service, the average corn yield for Hughes County in 1936 was 1.8 bushels per acre.

Ness said his farm experienced several dry years over the last decade. In 2017, 2020, and 2021, the Pierre Regional Airport received roughly 14 inches of annual precipitation. So, while conditions weren't as bad as the height of the Dust Bowl, they were still very dry.

In those years, Ness said that he only experienced one corn crop failure in one field of rented ground that he had taken over just two years prior. Before that, the land wasn't managed with no-till practices, and the soil had not yet had time to recover. All of his other corn acres experienced average yields in those dry years.

South Dakota State University Extension State Climatologist Laura Edwards underscored the benefits of regenerative agriculture that Ness has experienced on his operation.

"I think regenerative ag practices serve multiple purposes, and one of those is to be more resilient in the face of extreme weather," Edwards said. "I tell people we don't need to invent a new toolbox to survive a changing climate. We already have that toolbox with regenerative agriculture or soil health practices."

To learn how regenerative land management can make your operation more resilient, visit www.sdsoilhealthcoalition.org or contact the South Dakota Soil Health Coalition at sdsoilhealth@gmail.com or 605-280-4190.

Awards Announced at Soil Health Conference

The Tenth Annual Soil Health Conference, Jan. 13-14 at the Best Western Aberdeen Hotel and Event Center in Aberdeen, SD, saw approximately 400 attendees, including dozens of students. The South Dakota Soil Health Coalition was thrilled to offer this opportunity for regenerative land management education and present its annual awards, including awards for student contest winners.

The conference featured 28 land management presentations, panels, and discussion opportunities for attendees. The Conference included over 30 speakers covering topics ranging from the economics of regenerative agriculture to gardening for soil health to rangeland management and much more!

Awards

As part of the conference, SDSHC announced the winners of its two annual awards.

Doug Sieck was named the 2026 Legacy Award winner. He was a founding member and the initial chairman of the SDSHC Board of Directors. In this role, he was instrumental in growing the SD Soil Health Coalition from an idea to a highly active non-profit organization working to promote regenerative agriculture across the state. He shares his time and knowledge generously to help anyone he can, and his deep care for both the land and his fellow humans is evident in his every word and action. Doug is the owner and operator of Deep Root Ranch in North Central South Dakota.



Doug Sieck was named the 2026 Legacy Award winner. SDSHC photo

Dr. Peter Sexton was named the 2026 Friend of Soil Health Award winner. He is an associate professor at South Dakota State University, supervisor of the Southeast Research Farm, and a SDSU Extension sustainable cropping systems specialist. In addition to serving as an outstanding advisor to students and overseeing excellent field research, he also shares his time and knowledge at several Coalition events to help further sustainable agriculture education throughout the state!



Dr. Peter Sexton was named the 2026 Friend of Soil Health Award winner. SDSHC photo

Student contests

To spark an interest in soil health among young people in South Dakota, the SDSHC incorporated student essay and video contests into this year's Soil Health Conference. In the post-secondary division of the essay contest, Chitra Sudalaimani of South Dakota State University won $400 for first place. In the high school division, Harmony Eberhart of Herreid High School was awarded $300 for first place. In the middle school division, Kathryn Scott of Spearfish Middle School won $200 for first place.

The video contest consisted of one division open to all K-12 students in South Dakota. Katy Scott of Whitewood, SD, and Leela Bosworth of Spearfish, SD, won $750 for first place. A team from the Webster FFA Chapter won $500 for second place. A team from Sunshine Bible Academy, SD, won $250 for third place.

The winning video and essays are available to view at www.sdsoilhealthcoalition.org/soil-health-conference/students/.

The SDSHC thanks all speakers, panelists, attendees, and viewers for making this year's conference a success. Recordings of the presentations will be made available online at www.sdsoilhealthcoalition.org.

Next year's Soil Health Conference will be held January 26-27, 2027, at the Best Western Plus Ramkota Hotel in Sioux Falls, SD.

Sponsors

SDSHC thanks the sponsors of the 2026 Soil Health Conference:

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- Second Century Habitat Fund
- Sentinel Ag
- Soil First
- Southcentral RC&D
- Southeast Research Farm
- Tire Winder
- USDA-NRCS
- Vence
- Ward Laboratories Inc.

Upcoming Soil Health Events

Feb. 17
Seed Starting Workshop
Frankfort, SD

Feb. 20
South Dakota Producers Summit
Huron, SD

Feb. 25
Managing Salinity on Working Lands
Langford, SD

March 3
No-till Gardening with Master Gardener Chris Goldade
Aberdeen, SD

March 3-4
South Dakota Grasslands Summit
Mitchell, SD

March 23
Highmore Info Show
Highmore, SD

March 26
Gardening Workshop
Aberdeen, SD

March 28
Ready Set Grow
Watertown, SD

June 16-18
South Dakota Grazing School
Wall, SD

June 24-25
West River Soil Health School
Caputa, SD

July 16
Value of Plant Diversity For Land and Livestock
Online

Sept. 9-11
South Dakota Grazing School
Chamberlain, SD

Sept. 15-17
Soil Health School
Twin Brooks, SD

Access Our Events Calendar HERE.

Farmers Growing Profits and Soil Health With Winter Camelina

By Stan Wise

By now, most people working in agriculture have heard that growing a cover crop after a cash crop is harvested can make a big difference in soil health. Healthy soil pays off in a number of ways, including reduced input costs and increased operational resilience, but farmers have to get creative if they want their cover crops to make direct contributions to the bottom line.

A new program in South Dakota can help producers do just that by turning their cover crop into another cash crop.

Camelina is a crop that produces an oilseed which can be used to create biofuel, and the winter variety of camelina can be planted in the fall and harvested the following summer. That offers some interesting opportunities for farmers.

For instance, in a practice called relay cropping, producers can plant soybeans (or other crops) into the growing camelina in the spring. The camelina is harvested in late June or early July, and then soybeans can be harvested from the same field in the fall. This system allows producers to get two cash crops off the same land in the same year while reaping the soil health benefits of having continuous roots in the soil for a longer portion of the year.

The challenge for producers in South Dakota, at least, is finding a nearby market for the camelina, which is not accepted at most grain elevators in the state.

On-farm pickup

This is where Cargill's SourcePoint Commodities Winter Camelina Program might come in handy.

"Our contract offering includes a number of different things for growers to make decisions on, starting with delivery or pickup on-farm," Cargill Novel Oilseeds Program Manager Anna Teeter said, noting that the goal is to give growers flexibility as they decide whether camelina fits their system.



Winter camelina provides excellent forage for pollinators. USDA-ARS photo



Winter camelina in bloom. USDA-ARS photo

That on-farm pickup isn't the only benefit of Cargill's program.

"We are also pricing the contract off of soybean futures with an additional premium," Teeter said. "And this allows growers to actually price when the market moves rather than a flat rate price, which a lot of growers have been quite happy with."

The program also offers a minimum revenue guarantee for participants designed to help growers manage risk while they build experience with a new crop.

"For growers that take the crop to harvest, you will have a minimum revenue that you can earn per acre," Teeter said. "It's acting kind of like a crop insurance or a risk program so that growers feel they have some backing for trying something new while they get yield history for federal crop insurance."

While relay cropping camelina with soybeans results in diminished soybean yields, the addition of the camelina within the same year can see an increase in total revenue.

"On average, our better growers are seeing 25, 26, maybe even 27 bushels an acre (of camelina). And with the relay concept, they're seeing that with a maybe 10-percent reduction in their soybean yield," Teeter said. "If you have an average of 50 bushels soybean yield and you lose 10 percent, that's five bushels. Okay, well, you're losing five bushels, but you're gaining 25, right? And so that's where the math for growers really can start to make sense in a way that helps us diversify the rotation, include soil health practices, and still have an economic opportunity for farmers."

Other benefits

Winter camelina is more than just an additional revenue stream.

U.S Department of Agriculture – Agricultural Research Service Research Agronomist Dr. Carrie Eberle said that studies have demonstrated camelina's soil health bene-

Continued on Next Page

Camelina — Continued from page 4

fits.

"What we have found with winter camelina in our studies is that it really offers the same benefits that a cover crop does," Eberle said. "Winter camelina is going to be planted in mid-September and is going to be harvested in early July. And from that mid-September till around the end of April, its job is basically to be a cover crop."

Eberle's research in Morris, Minnesota, includes a focus on agroecology. She said studies have shown that camelina decreases soil erosion, improves soil structure, scavenges excess nitrogen, and provides food for pollinators. It can also be paired with crops other than soybeans, including millet, dry beans, and sunflowers, allowing for a more diverse crop rotation.

Camelina can also play a role in weed control.

"When you have a good stand of winter camelina, it seems to be very effective at suppressing those early spring weeds," Eberle said. There is also an option to control weeds in the soybeans with the same chemical application that is used to desiccate the camelina prior to its harvest.

Learning curve

Producers growing winter camelina for the first time shouldn't expect everything to go perfectly in the first year, Eberle said.

"The first thing I tell any producer that's trying something new is there's going to be a learning curve. You know, it's not corn and soybeans. You haven't been growing it for 30 years. So, you need some patience," Eberle said, "and don't throw the baby out with the bathwater if some things go awry."

Producer David Kruger grew camelina for the first time last year on his farm near Twin Brooks, SD, and he experienced a few challenges.

"So last year, I planted 80 acres of it, and it was so dry when we planted it that it never started. It was laying in dry dirt," Kruger said.

Then his farm received a couple of inches of rain in mid-December, and some of the camelina began growing. "Then some of it came up in the spring, some of it didn't. It was a really thin stand. It was like maybe a third of a stand. So, we took out pretty much all of it," Kruger said.

However, he kept eight acres so that he could get the experience of harvesting it. That was valuable experience, as it gave him a chance to learn what changes needed to be made to his combine to harvest such a small seed. Kruger was also late getting it harvested, and his soybeans had grown tall enough to be damaged by the combine.

This year, Kruger knew he wanted to make some changes from the very beginning. He plugged the row on his drill every 30 inches when he set it up to plant to plant the camelina.

"So, we've got a skip row of camelina every 30 inches, and then we plan to plant beans in that 30-inch spacing in that row that we skipped," he said. "And then my hope is that we harvest it 20 days earlier (than last year) where the beans will still be shorter, and if they're not, I figured I'll just put a piece of drain tile over the cutter bar where the row is so it pushes it over instead of cutting it off."



The winter camelina in this field trial is drying down prior to harvest. USDA-ARS photo

Eberle recommended checking equipment before harvest. "It is so small seeded that it basically flows like sand. So, any small cracks or crevices that it can flow out of in your, grain cart or your combine need to be sealed up. But we all know duct tape is everyone's best friend," Eberle said.

Other modifications will need to be made to the combine to make sure the seed is properly cleaned and shatter loss is minimized.

Despite the learning curve that comes with growing a new crop for the first time, camelina has the potential to be a tool growers can use to make soil health practices more affordable.

"I'm really, really excited for the crop to be available in South Dakota because it's an intermediate oilseed that allows growers to take advantage of winter months when we're not growing a lot of other things, giving South Dakota farmers another option they can evaluate based on what works best for their operation," Teeter said.

To learn more about the benefits of diverse crop rotations and improved soil health, visit www.sdsoilhealthcoalition.org or contact the South Dakota Soil Health Coalition at sdsoilhealth@gmail.com or 605-280-4190.

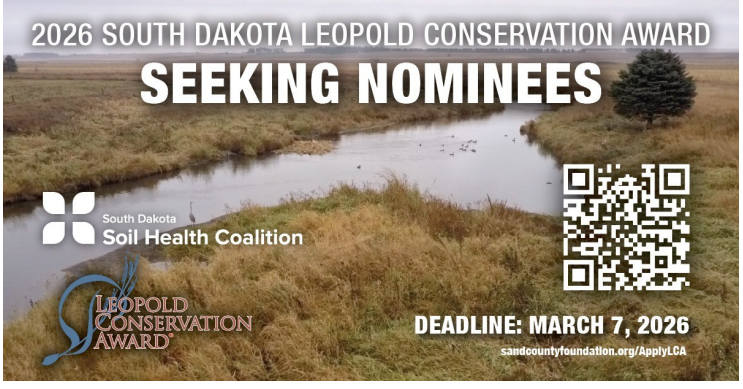
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