South Dakota Soil Health Coalition

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Moisture levels critical to cover crop decisions

By Stan Wise
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PIERRE, SD – Cover crops offer a wide range of potential benefits for producers – better nutrient cycling, more weed suppression, more livestock forage, better soil structure, increased soil organic matter, and healthier soil microbial communities. To reap those benefits, producers need to make some careful decisions.

Those decisions start with the goal for the cover crop. Is it intended primarily to produce forage for livestock, provide weed suppression, or feed the soil? The answer to that question is the first piece of data needed, but it's not the only one.

Another critical point to consider is how much moisture a producer expects to be available the following cash crops. If a cover crop uses too much moisture, it can affect the yield of a water-sensitive crop like corn in the following season.

Monitor soil moisture

Dan Forgey, longtime agronomy manager at Cronin Farms near Gettysburg, SD, finalizes his cover crop decisions by determining how much moisture is already available in the soil. "There's a lot of people say, 'Plant them in dry dirt and it'll happen.' I won't do that because you want your covers to be a success," Forgey said. "We're really cautious with our covers on these drier years. I go out with a soil probe. I use the soil probes because then you can actually tell what you have for moisture."

Cronin Farms has a diverse crop rotation, and they normally plant cover crops with higher carbon/nitrogen ratios for grazing after winter wheat harvest.

"When we planted our cover last year, it was after harvest. It was probably like the 6th or 7th of August that we planted it, and at that time with the soil probe, we had 16 inches of moisture in our profile," Forgey said.

Forgey thought that was a little dry. He said the farm had received just enough rain that spring and summer to make a good crop, but it wasn't enough to fully recharge the soil profile. Still, after some careful thought, the Cronin Farms team decided to plant the cover crops anyway.

"So, we thought, well, if we caught two or three inches of rain in the fall, that would make up for it," Forgey said. "That's what we normally do."

At the time of cover crop planting, he said the available moisture was at 86 percent of normal, so he reduced his seeding rate by a corresponding percentage. The goal is to reduce the number of plants taking up water in the field.

There was only one problem with his plan – Mother Nature had other ideas.

"We had the rain in July, and then we never had another rain until it snowed this winter," Forgey said. "And so, basically, (the cover crop) used all that moisture up."

The cover crop wasn't a total loss, but the true damage of last year's dry fall won't be known until this year's corn is harvested. That's when Forgey will really know if his cover crop decision paid off.

"The cattle grazed it, so we got some benefit out of it, but looking back, as dry as we are this year, it's going to tell a story," he said.

Flexibility

While it's true that cover crops planted after small grains carry a risk in dry conditions, they can offer a useful flexibility.

Selby, SD, crops and livestock producer Doug Sieck planted cereal rye last fall after baling off some oats and peas.

"With rye, I plant that in the fall, so people will say, 'What are you going to do with that?' And I say to them, 'I don't know.' And I really don't," Sieck said. "When spring rolls around, I've got the option of grazing it and then plant something behind a grazing. Or maybe I'll let it grow and plant green into it when it's knee high and then kill it. Or maybe I'll cut it for hay like I am now. Or maybe I'll let it go and combine it. And I've done all of those things, sometimes in the same year."

Full season covers

Sieck, who is a South Dakota Soil Health Coalition board member, admits that planting a fall cover crop can be a bit of a gamble when it comes to moisture.

"If your cover crop uses, let's say, 3 inches of water, 90 percent of the time you'll get enough moisture over the winter to replenish those 3 inches. Well, 10 percent of the time you don't," he said. "A few years ago I was whining like everybody to [noted Burleigh County, ND, conservationist] Jay Fuhrer, and I said, 'I don't have enough moisture to grow these covers reliably,' and he said, 'Well, why don't you dedicate a full season to growing cover crops?' And so about then I switched mostly to full season covers."

Most of Sieck's cover crops are now a sudangrass mix including millet, turnips, radish, rapeseed, yellow blossom clover, and potentially other species planted in late June and used for fall forage. "As a guy who believes in a diverse rotation, I use the sudangrass mix for my diversity," he said.

Forgey also said there is a place for full season cover crops, and he mentioned a time he used one in a prevented planting field.

"It had a tremendous amount of moisture in that field, and we just left it," Forgey said. "And then we let the frost take it out, and the next year that was the best corn we had."

Newell, SD, producer Dave Ollila grows small grains for hay to feed his cattle and sheep, and he grows cover crops for forage and hay. In dry years, he will reduce the diversity and seeding rate of his cover crops, but he still plants them.

"For full season (cover crops), it worked well for us to get them planted in May, June to graze them, or sometimes if it's dense enough and we were early enough, we'll take a hay cutting to let them regrow, and then we'll graze them later," Ollila said. "But our goal is to follow that cover crop with the winter annual. So, we'll be terminating that cover crop somewhere in late August or early September and planting a winter annual."

Fall nutrition

Ollila, who is a SDSHC soil health specialist, said he also grows cover crops after harvesting his small grains for hay.

"The other way we use them is following a hay, like a cereal hay like oats or wheat, and then we try to get a cover crop to follow into that both to have that living root in the soil, but then, hopefully, to graze that in October," he said.

The reason he likes to graze cover crops in the fall is simple – nutrition.

"A lot of times we will breed our ewes on those cover crops because the samplings I've taken, the nutrition put us somewhere between 17 and 22 percent protein, which is ideal for that time of year when nothing else is at that level," Ollila said. "That's perfect for breeding those ewes."

Well-researched decisions

Sieck said that for a cover crop to be a success, producers need to understand the cover crops in their mix and how much moisture they will use.

"The guys around here that are that are doing things like covers, a lot of them are reliant on the agronomists at the co-op in town and saying, 'Well, just fix me up with something.' Well, that's a sure recipe to grow a lot of forage out there and lose your moisture," he said. "I'm a solid yes on planting even if it's dry, and I'm a solid yes on planting the right thing out there."

"Without a doubt, I believe in covers," Forgey said. "All I'm saying is understand your system and understand how much moisture you've got when you plant your covers."

Financial and technical assistance is available for producers interested in getting started with cover crops. To learn more, visit www.sdsoilhealthcoalition.org or contact the South Dakota Soil Health Coalition at (605) 280-4190 or sdsoilhealth@gmail.com.

SD Soil Health Coalition photo

Longtime Cronin Farms agronomy manager Dan Forgey leads a discussion panel during the 2022 Soil Health School near Garretson, SD. He always checks his soil moisture levels using a probe before making final cover crop planting decisions.

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SD Soil Health Coalition photo

Selby, SD, producer Doug Sieck, left, explains his cover crop choices during a tour of his operation. He now grows mostly full season cover crops due to his moisture concerns.

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USDA-NRCS South Dakota photo

Newell, SD, producer Dave Ollila uses both fall and full season cover crops to feed his cattle and sheep.

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Courtesy photo

This cover crop at Cronin Farms near Gettysburg, SD, was planted into heavy stubble on Aug. 12, 2022, at which time the field had 16 inches of soil moisture. The crop received no rain after planting, and when this photo was taken on Sept. 25, 2022, the field was so dry that it was difficult to push a soil probe into the ground, and growth on the cover crop had stalled. The yield of the corn crop planted in this field in the spring of 2023 may be affected due to the consumption of soil moisture by this cover crop.

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