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Healthy land management can prevent dust storms

By Stan Wise

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PIERRE – In the past month, dust storms have been making headlines across the western United States, including South Dakota. Blowing soil has created driving hazards due to low visibility, and accumulated wind-blown silt even forced boat ramp closures near Fort Pierre.

“The dust storms of the past few weeks, I’ve never seen them this bad,” Natural Resources Conservation Service State Soil Scientist Nathan Jones said. “The road to my house – I live off gravel – it was even blacked out by dust being blown across the road.”

It might be tempting to blame the dust storms on high winds, but as Jones said, “The wind never stops in South Dakota.”

The real issue, he said, is how people are managing their land.

“The biggest problem is people leaving their ground uncovered,” Jones said. “If we look at a lot of the native range in western South Dakota, there’s always grass. There’s always something covering the soil surface. So, when something happens and the soil is left uncovered, it blows, and the soils in western South Dakota, especially, are kind of fragile, and when they’re mismanaged, they blow and erode really, really bad.”

Soil can be exposed through tillage or being left uncovered by crop residue or cover crops after harvest. In livestock operations, overgrazing is also a problem, Jones said. “Eventually, you lose your good native range vegetation, the stuff that’s tasty to the animals. You get into a bare ground situation,” he said.

No matter the reason, once the soil is exposed to wind or rain, it’s vulnerable to erosion. Even land managed with no-till practices can erode if it is left uncovered.

Dean and Candice Lockner run a custom grazing operation near Ree Heights, SD. “We had crop ground right next to us – neighbors – and they were using a no-till operation, and they were having dust storms,” Dean Lockner said. “They were doing no-till, and then that fall they turned the cows in, and they grazed it down to the dirt, and then they wondered why the land blew. These people said, ‘Well,

we were doing no-till,' and they had cattle on the land, but the land was barren. It was bare dirt. The cattle had eaten everything off of it that was there to hold it."

A serious problem

These dust storms pose several difficulties for South Dakota ag operations and their surrounding communities.

"Well obviously, we're losing topsoil," Jones said. "We talk about water as our most limiting factor as far as growing stuff in South Dakota, but if we lose our topsoil then we don't have the nutrient-rich part of the soil surface for plants to grow in, and then we're left growing in subsoil where there are less nutrients, where it's just harder for plants to survive and thrive."

Dust storms also increase the risk of vehicle accidents. "A few years ago, we had a place on Highway 14 between Highmore and Miller where the road was blacked out, basically, due to a dust storm, and there was a traffic accident caused by that," Jones said.

Jones also mentioned that air quality is an issue. "I think more and more we're running into people who have asthma or some sort of breathing issues," he said. "If you've planted crops and you've fertilized, then now you have fertilizer-tainted soil blowing through the air that you're breathing into your body, and that's never a good thing."

Land management solutions

The good news is that land can be managed to minimize erosion.

"I used to have about 1,500 acres of crop ground, and we used to farm it, and we're at the foothills," Dean Lockner said. "I was seeing a lot of soil erosion coming out of the Ree Hills on crop ground. I didn't like it, and when the ranch came under my management, I decided I wanted to correct that. I think long-term. I expect this land to be here for a long time, and I want to take care of it that way."

"Part of our transition, though, had to do with obviously just observation," Candice Lockner said. "You know when you see the water ruining the roads or you see the dust storm causing traffic accidents, you have to say, 'Okay, so I see what's causing it,' and when we realize that we are causing it, then what can we do about it?"

The Lockners converted their cropland to grassland and started a custom grazing operation. "Basically, the way the markets are, it is our most economical option for us to do, to not own the livestock and just custom graze for other people."

To protect their grassland and their soil, the Lockners use rotational grazing. "We typically rotate the cattle every three to four days in the springtime and maybe up to a week to 10 days, at the most, later in the fall when the grass isn't growing as fast," Dean Lockner said.

By moving the livestock quickly over smaller portions of pasture, the Lockners give their grassland plenty of time to recover from grazing. That keeps healthy plants and healthy roots in the soil to protect it from erosion.

"There is no dust blowing here, and we can show the pictures in 2018 of our grassland right beside the field that's blowing. There's nothing blowing on our grassland," Dean Lockner said. "We have pictures of

a vehicle coming out of the dust storm, and you know it's clear once they got to our grassland, but just beside our grassland, you couldn't see the vehicle a couple hundred yards into it. That's how bad it was. We're seeing that all the time.”

There are good land management options for farmers growing crops, as well.

“If you're a farmer and you're cropping your soil, you've got to leave it covered. Don't till it. That's probably the biggest problem is tilling your ground cover under. We want to leave that soil armor on the surface,” Jones said. “We need to have a diverse crop rotation so that we're getting in some heavy residue crops along with some of the lighter ones like soybeans or peas – those leave almost nothing to protect the soil surface.”

While it might not be an option for every producer in every year, growing a cover crop or an overwintering cash crop like winter wheat can be an excellent way to improve and protect the soil.

“Going in and planting a cover crop after you harvest is going to leave a root growing in the soil to help your biology, but it also will put something green above ground catching sunlight, using photosynthesis to create sugars for your microbes and then protecting the soil surface,” Jones said.

The payoff

By using land management practices that protect the soil, producers can improve their profitability, improve their operational resilience, and reduce their stress levels.

“We are doing less and are more profitable than we ever were when we were working our tails off,” Dean Lockner said. “It's astonishing, and it doesn't sound logical, and I still have that battle within my own heart: Something's wrong, I'm not suffering enough.”

“We actually went for our annual physicals, and she kept telling us all these things were better. What were we doing different?” Candice Lockner said. “And honestly, we didn't know what we were doing different until we got home and realized that our life is just more sane and balanced, and we could actually take care of ourselves.”

More information about soil health practices and ways to improve land management is available at www.sdsoilhealthcoalition.org.



USDA-NRCS South Dakota photo

Wind erosion near Pierre, SD, caused hazardous driving conditions this spring. Healthy land management practices can prevent dust storms like this one.

Download a high-resolution version of this image at <https://bit.ly/3LpoJJF>.



USDA-NRCS South Dakota photo

This soil near Ft. Pierre, SD, has been removed by the wind from fields and piled along fences. Those fields are losing their most fertile soil, and the blown dirt reduces the fence's effectiveness.

Download a high-resolution version of this image at <https://bit.ly/3OLYr6g>.



Photo courtesy of Van Mansheim

This cereal rye cover crop near Colome, SD, was planted after last year's oat harvest. It is protecting the soil from erosion, and its roots are feeding soil microbes. It will continue to grow, and soybeans will be planted into it this summer. After it is terminated, its residue will control weeds, protect the soil surface, and add carbon to the soil as it breaks down.

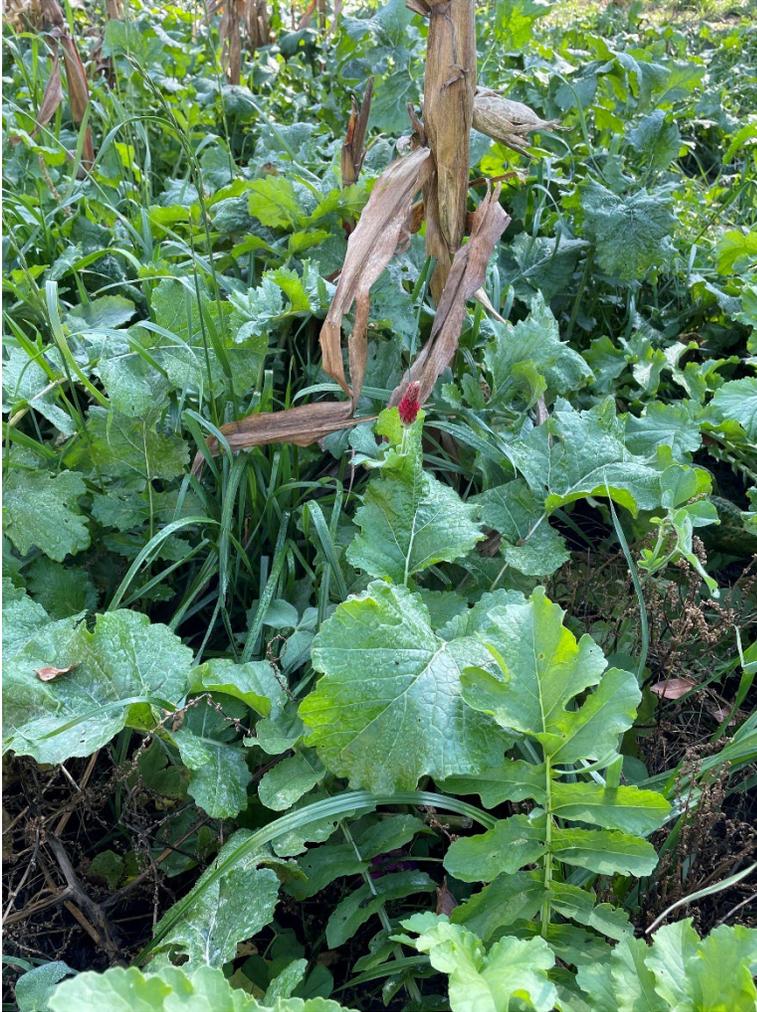
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Photo courtesy of Candice Lockner

A diverse perennial plant population protects the soil from wind and water erosion and offers healthy forage for livestock.

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SD Soil Health Coalition photo

A diverse cover crop mix like this one feeds many different types of soil microbes, adds nutrients to the soil, offers a variety of habitat and food for wildlife and beneficial insects, and provides forage for livestock, all while protecting the soil.

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SD Soil Health Coalition photo

Overwintering cash crops like this winter wheat can be part of a diverse crop rotation and offer a profitable way to keep living roots in the soil throughout much of the year, improving soil health and protecting the land from wind and water erosion.

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