

Cattle play an important role in soil health

By Jennifer M. Latzke

Michael Thompson, Almena, Kansas, grew up farming a conventional tillage system of wheat and fallow.

And while the system worked in good years, Thompson knew that the land could perform better, if given the chance.

"I knew our land was not functioning as it should," he explained. "Our soil lacked resiliency. During dry times we would have total crop failures. It would require average or above average soil moisture to have a harvestable crop."

It was a situation that concerned the young farmer as he considered returning to the farm and starting a family.

"I knew if I was to return to the farm, we had to solve these problems," Thompson said. "Basically, there was not enough land or profitability for me to farm under our old system of farming." So, the choice was made to go completely no-till on the farm in 2000.

And yet, that one choice still wasn't enough to solve every problem. It was a piece of the solution, but not the only piece.

"I started studying soil function and how our soils were formed by prairie grasses and the huge herds of migratory animals like bison that had grazed and improved our soils," he said. It got him to formulating a plan to eliminate fallow and instead replace that part of his cropping rotation with multi-species forage crops that would improve water filtration and provide soil cover.

For 8 years, the Thompsons have used their cow-calf herd, with high stock density grazing on their multispecies forage crops to improve the soil. And it's working.

"The cattle eat the best of the forage, and some of the lower quality forage is used as soil cover," he explained. "The soil benefits from the extra soil cover as well as the nutrients that come from the cattle herd in the form of manure and urine."

He sees more soil cover on side hills and other poorer areas on the farm, which leads to reduced soil erosion and ditch formation on their fragile soils.

"We did not lose soil function overnight and it will not return in a single season."

— Michael Thompson

"The cattle also stimulate microbiology that helps decompose residue and recycle it as nutrients for our cash crops," he said. "We have improved water-holding capacity to the soil by improving organic matter levels on our farm. We have also eliminated fallow periods so that helps (reduce) chemical expense on our farm and helps keep our herbicides more effective with less frequent use."

Thompson said he wished he would have added diverse forages and grazing in their operation from the beginning of their new program. But adding livestock into a soil health program needs careful consideration of the land, production goals and operational costs.

"The main hurdle is working with Mother Nature," he said. "We only have so much moisture and so much growing season." From time to time balancing crops and cattle can be challenging. There's also a learning curve regarding how much residue

to leave on the land and how to effectively implement a rotational grazing system. In his dryland environment, the key was finding the right blend of forages and water use.

Today, they've eliminated some input costs, such as chemical, extra fertilizer, extra hay, and even having to rent extra pasture with their soil health program.

"While we are grazing multi-species crops, the pastures re-grow so it puts less strain on our pastures and we are seeing diversity of grass species improve in our pasture."

Asking questions was critical to making the move to changing a lifetime of farming practices, Thompson said.

"Experiment on small acreages for multiple years and stay committed to see if things improve," he advised. "We did not lose soil function overnight and it will not return in a single season." Most of all, find the way that works for you to improve your own soil resource while still being able to generate revenue or cut expenses on your farm, he added.

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Breakout Speaker

MICHAEL THOMPSON

MICHAEL THOMPSON

Thompson Farms, Almena, Kansas

FARM OPERATION: Diversified cash crops and cowherd

AVERAGE RAINFALL: 25 inches annually

CROPS: Wheat, corn, oats, barley

COVER CROPS: Grass, broadleaf, legume and brassica species to use in grazing, to prevent soil erosion and boost soil health.

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Pushing a soil health program pays back

By Jennifer Carrico

The driving force behind raising crops is soil health, said South Dakota farmer Dan Forgey.

"I spent the first 24 years of my farming career destroying the soil on our farm and I've spent the last 24 adding practices to improve soil health for the next generation," said Forgey, who is a keynote speaker at Soil Health U and Trade Show, Jan. 24-25, at the Tony's Pizza Events Center, in Salina. "We've been 100 percent no-till for 24 years and have used cover crops since 2006."

Cattle are a big part of Forgey's 9,000-acre operation. Grazing of cover crops by the cow-herd allows feed for the herd, plus provides soil improvements.

Calves are pasture weaned on cover crops, which has worked well for Forgey. "We turn out pairs on the fields. They all eat the cover crops and cows are then removed to wean and the calves accommodate well to the weaning since they are already on full grazing," he said.

Several different cover crops are used and have been tried. Oats, flax, forage barley, field peas, turnips and radishes are common and a 12-way mix of seed has also been used for extended grazing.

"We take soil tests on all fields to know how the cover crops are helping to improve soil health and we also like to compare yields to see differences," Forgey said.

In the low rainfall environment near Gettysburg, South Dakota, Forgey said residue is always left on the soil surface to

help conserve moisture. All soils are tested to determine the needs of the ground and to show any changes.

Rotational grazing is used in the cover crops and 80 percent of the residue is left on the field. Cows can typically graze 30 to 45 days on cornfields where cover crops are grown.

"We have seen an increase in organic matter of 1 percent since we've been using no-till and cover crops. I consider that a move in the right direction," Forgey said.

It is critical for the carbon in the soil to be high and crop residue helps build the carbon. It is amazing to see the layers of organic matter building in the soils, he said, adding that his farm is still a cash farm,

so they have to do things to make the operation profitable and improving soil health has done just that.

"Our neighbors might wonder what we are doing or why we are doing it and it is all to improve the land for future generations," he said. "This isn't a magic bullet, but rather a tool to help us continue to be responsible for the land and the crops that are coming off of the land."

The soils are giving back and helping raise the 11 different crops on the farm, including wheat, barley, field peas, lentils, flax, sunflowers, corn and soybeans. Each grain has a purpose and each one fits into a diverse rotation, Forgey said.

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"I spent the first 24 years of my farming career destroying the soil and the 24 adding practices to improve soil health for the next generation."

—Dan Forgey



Keynote Speaker

DAN FORGEY

Agronomist for Cronin Family Farms,
Gettysburg, South Dakota

FARM OPERATION: 8,000 acres farmland, 8,000 acres pasture for 800 head cattle

SOIL TYPES: Silt loam to heavy clay

AVERAGE RAINFALL: 18.5 inches annually

CROPS: 16+ crops in four-crop rotations: Soybeans, corn, winter wheat, spring wheat, sunflowers, field peas and lentils

FORAGES: alfalfa, millet, teff grass and sudan grass

COVER CROPS: cowpeas, purple-top turnips, radishes, canola, vetch, forage soybeans and rye

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Ground cover, organic matter key to no-till practices for Kansas farmer

By **Kylene Scott**

About a dozen years ago, Ben Cramer of Healy, Kansas, came back to his family's farm. His dad was considering retirement and some things needed to change.

"He'd been running on old equipment because he was ready to retire," Cramer said. "We were going to have to upgrade tillage stuff, so it was a good time for us to try this."

And by "this" Cramer meant converting from conventional till to no-till. They've been 100 percent no-till since about 2005, and Cramer is one of a handful in Lane County, Kansas, still using these techniques to improve production.

"It takes a little bit different mindset to make it work," Cramer said. "I'm trying to look at the long-term benefits of it over maybe the

short-term economics. Although I don't feel like it's hurting me economically."

Cramer has wheat, grain sorghum, corn and soybeans on his dryland acres and has been experimenting with cover crops for the past six or seven years. He's new to cover crops, and he's going to start grazing more in 2018.

"We're going to try to mob graze some cover crops with some stocker cattle to see how we get along," he said. "If we can figure out how to make a couple of bucks at it on top of improving the soil hopefully."

Commodity crop prices have pushed him to look for different avenues to make a profit.

"We're going to take a look at doing a little more graze and less grain this year, and see how it goes," he said.

In the dozen years he's been using no-till practices, Cramer has gained organic matter in his soil, but also a greater appreciation for conservation practices.

"We've degraded the resource for a hundred years out here," Cramer said. "I've already seen a loss in productivity in my lifetime. I can't imagine what it'll look like in another 100 years if we don't do something different."

He also wants his kids—ages 10 and 12—to have something to come back to if they want to farm.

"My hope in the long term is it's going to be an economical advantage," Cramer said. "If we can reduce our herbicide, pesticide, chemical or fertilizer costs it'd be more productive. I think there's an economic advantage to this down the road."

Cramer has been trying to do less and less fallow all the time.

"Trying to keep something growing out there as much as we can, which

isn't the easiest thing to do in western Kansas," he said.

He's seen some improvements in his soil's health, and thinks he's headed in the right direction as earthworms have returned to his fields. But he also feels like he's plateaued and needs to find a way to get over the "next hump."

He's hoping the cover crops will help push things to the next level, especially by keeping the ground covered and conserving water and keeping nutrients in the soil.

"The big obstacle out here is always water," Cramer said. "If it rains out here we can do some neat stuff."

In 10 years he's been able to add 1 percent organic matter to his soils, and he'd like to add another percent in the next decade.

"That's kind of the key to the whole deal is ground cover and organic matter," he said. "That's kind of what makes it work."

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*"The key to the whole deal is ground cover and organic matter. That's kind of what makes it work."
— Ben Cramer*



Farmer Panelist

BEN CRAMER

BEN CRAMER

Farmer Panelist, Healy, Kansas

FARM OPERATION: Diversified cash crops and cowherd

AVERAGE RAINFALL: 21 inches annually

CROPS: Wheat, grain sorghum, dryland corn

COVER CROPS: Oats, barley, lentils, winter peas, rapeseed, crimson clover, flax, common vetch for groundcover and grazing.

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Making mistakes part of life for no-till advocate

By Larry Dreiling

Dan Schultz admits he's made a few mistakes.

A no-tiller since 1992, Schultz, a Grainfield, Kansas, farmer, uses a wide variety of crop rotations along with cover crops to make those rotations work better.

"I've been making mistakes on no-till since then. Making mistakes on cover crops since 2005," said Schultz with a bit of a laugh.

"My irrigated rotations are more steady than my dryland rotations, primarily because I can use some water to manipulate things to get things planted," said Schultz, who is a speaker at Soil Health U and Trade Show, Jan. 24-25, at the Tony's Pizza Events Center, in Salina, Kansas. "Corn, sunflowers, soybeans, wheat, sorghum. We have land that has not have had any added iron in them since that time."

His farm is a 75:25 ratio of dryland to irrigated crops. Schultz considers himself an early adopter of using cover crops with no-till in his areas, and said he's made his share of mistakes on a range of things.

"The wrong mixes were one thing," Schultz said. "Not giving Western Kansas enough time to recover from the lack of moisture. You can run pretty tight rotations, but you run into an extended dry period, we're in trouble. We don't supplement with a lot of irrigation, since I'm not blessed with a lot of water."

After the cover crop Schultz plants behind wheat, he then plants sunflowers, followed by sorghum the following spring.

"So we now go from cool season wheat to warm season grass with a cover between them," Schultz said. "After the sorghum comes off, the following year will come corn, then rye as a cover, then soybeans before we go back to wheat. So, we'll have seven different crops in

five years."

Though all those crops, Schultz tries to fit in a cover crop in-between.

"In a normal scenario, I'll started with irrigated wheat, and then come in with a multi-specie cover crop into the wheat stubble," Schultz said. "It's a mix of rye, flax, sorghum sudangrass, brassicas like radishes and turnips, sunn hemp, and some teff."

"I've tried vetch in the past. I've thrown in some mustard, some rapeseed. Just a multitude of things. I like the carbon mix. I've brought in cowpeas and mungbeans for legumes, but usually I lean toward a carbon mix."

Schultz said he's blessed with good soils, with silt loams and 19 to 21 inches of annual moisture on this shortgrass prairie, semi-arid environment. He also runs about 35 head of commercial cows on a perennial grass system.

"I used to use the cows to come in milo or corn stalks. Cows do have a place, but I'm really labor deficient. When you start bringing in cows and covers it's hard to do everything."

The most important thing Schultz said he's learned through successes and mistakes is to develop and hold onto his core values.

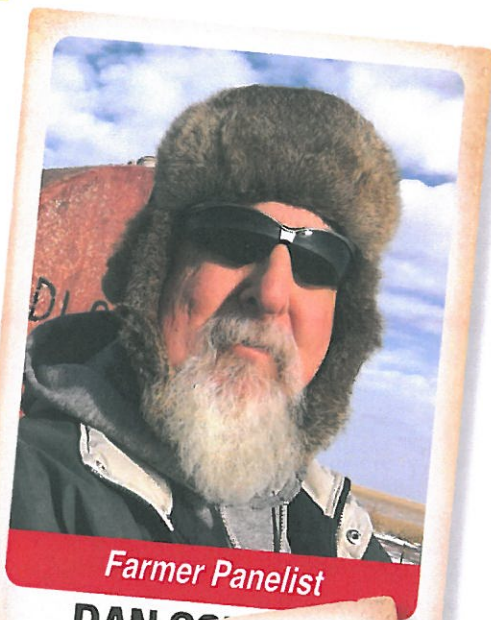
"First, is to keep the soil covered. Next, keep something growing on it as long as I can. Then, to diversify my rotations," Schultz said. "If I stay true to my core values and everything is no-till, hopefully I'm increasing organic matter, infiltration, and water holding capacity without using a lot of water."

"Understand there will be problems, but be true to your course. There will be things that will slam your finger in the door, but as we've progressed and learned on the use cover crops and livestock, the wall is a lowered one compared to the one we used to climb."

Larry Dreiling can be reached at 785-628-1117 or ldreiling@hpj.com.

"Understand there will be problems, but be true to your course."

- Dan Schultz



DAN SCHULTZ
Grainfield, Kansas farmer

FARM OPERATION: A 75:25 mix of dryland to irrigated crops with a 30-head commercial cow/calf operation.

SOIL TYPE: Silt loam.

AVERAGE RAINFALL: 19 to 21 inches annually.

CROPS: Wheat, sunflowers, sorghum, corn, rye, soybeans.

FORAGES: Corn and milo stalks.

COVER CROPS: Rye, flax, sunhemp, sorghum sudangrass, radishes, turnips, sunhemp, and some teff. In the past, he's tried vetch, mustard, rapeseed, cowpeas and mungbeans.

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