Cover Cropping mimics Mother Nature.

"Animals have four legs for a reason. We don’t need to provide them with a bed and breakfast.”

— Gabe Brown

Mother Nature doesn’t like bare ground” may be the first thing you hear from a cover-crop proponent, but the rhetoric doesn’t end there. What follows will be a fairly long list of convincing evidence to support what Gabe Brown, owner of Brown’s Ranch, east of Bismarck, N.D., uses to prove his point, “Where in nature do you find bare soil? Only where there was a catastrophic event or where man imposed his will on it.”

“Cover cropping is the new hot topic in agriculture,” says Jared Cook, a crop consultant for Rocky Mountain Agonomics of Burley, Idaho. Take a quick peak at YouTube and you can see why, but cover cropping does challenge traditional agriculture’s methods of planting a field with only one crop species.

Cook explains that a cover crop is any crop that is used in combination with the primary crop and/or fills in the time lag between crop rotations. Cover crops are typically a forage species and can be planted using corn planter or grain drill. Cover-crop seeds can also be spread with a fertilizer truck or flown over an already-standing crop with an airplane.

There’s not simply one way to use a cover crop. They can be planted in conjunction with primary cash crops or used in a pasture setting for rotational grazing.

Cook recommends planting a cover crop — like

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the Tillage Radish® — right in with cereal grains like wheat or barley, and he says turnips do well planted with corn. In addition to planting covers with his cash crops, Brown plants mixes of up to 20 different plant species, which will later be grazed. Brown operates 2,000 acres of cropland.

He states, “We try and get a cover crop on all 2,000 acres every year. It may be before a cash crop, along with a cash crop, after a cash crop, or it may be seeded as a full-season cover crop, which is converted to dollars by grazing.”

Benefits of cover cropping

Both Cook and Brown claim cover cropping increases yields by increasing overall soil health.

“Cover cropping is for the soil,” says Cook. “I would suspect, by and large, that throughout the U.S., most all soils could benefit from a cover crop.”

According to Brown during his “Five Keys to Soil Health” presentation at the 2014 Sustainable Agriculture Symposium hosted by the Idaho Center for Sustainable Agriculture, “Soil carbon is the key driver for the nutrition status of plants. Soil carbon is the key driver for soil-moisture-holding capacity. Therefore, soil carbon is the key driver for profit.”

Cover crops increase overall soil health by:

- **Armoring the soil surface.** “We want that soil covered at all times. If the soil is covered, it will be more difficult for weeds to germinate,” says Brown. He adds that reduced weed presence saves on herbicide application. Live growing plants, as well as plant residue, help to buffer heat, which, in turn, protect the microbes in the soil.

On his ranch, Brown measured soil

- **Right:** This photo was taken 56 days after a barley and forage radish cover crop was seeded.
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The growing season. Brown says the flowers attract both the pollinator insects and the predator insects.

Referring to his earlier statement, Brown concluded that monocultures are, in fact, a detriment to soil health. If they weren’t, they would be found in nature, while untouched native perennial pastures may have well more than 100 different species growing at a time.

Animal impact. Cook believes livestock on an operation are a luxury for the cover-cropping producer. In Cook’s experience, a cover crop completely tilled back into the soil presents residue problems.

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same as the summer, we don’t want to graze all of it. We want to trample residue, so we can build topsoil — one-third for the critters above ground, two-thirds for those below ground,” he recommends.

- **Water-holding capacity.** Healthy soil, says Brown, has a higher water-holding capacity, and he has the data to prove it. Brown explains that when he started farming his ground in the early 1990s, he had less than 2% OM in his soils.
  “At less than 2% OM, I could only hold a little under 2 inches of moisture per foot of the soil profile, so in a 4-foot soil profile, I could only hold a little under 8 inches of water. Today, I’m over 5% organic matter. I can hold over 20 inches of water,” he says.

- **Aggregation and aeration.** All soils are made up of three components: sand, silt and clay, says Cook. Based on soil type, each individual particle will form a specific aggregate. Good aggregated soil will have plenty of micro and macro pore space. The soil pores are where oxygen, nutrients and water are held, and where microbial action takes place.
  “The better you can aggregate your soil by way of plant debris, animal hoof action and biological activity in the soil, in general, allows for more fertile, more robust function in the soil,” he explains.

  “Soil should look like black cottage cheese,” describes Brown.

  Most soil pathogens can’t live in aerobic conditions. A well-aerated soil discourages pathogens, says Cook.

  “Plants create aerobic conditions within the soil; therefore, that is a natural strategy for eliminated disease pressure by increasing the aerated zone,” he says.

  “Diversity and biology in the soil is a natural predation on pathogens, as well,” Cook adds. “In the soil it’s Armageddon every day. It’s strictly a numbers game. It takes about a million bacteria to control one fungal spore, so anything you can do to promote the numbers of your beneficial organisms will be dividends down the road.”

- **Reducing erosion and water runoff.** Cook likens water runoff and soil erosion to standing atop a ladder and pouring a bucket of water onto bare ground. The pressure of the water hitting the soil causes it to move, leaving a hole.

  “If you’ve got a crop growing, that raindrop is going to hit the leaves before it hits the soil. That leaf acts as a cushion. It slows the velocity of that raindrop, so that raindrop can more easily be absorbed into the soil,” he explains.

  He adds that simply having root mass slows water flow and holds the soil in place.

**Results of cover cropping**

Brown cites his county average for bushels (bu.) of corn per acre as just less than 100 bu.

“**In 2012 we grew 142 bushels of corn per acre without fertilizers, pesticides or fungicides. My cost to produce a bushel of corn, market it, everything, is $1.44. Even at today’s corn price I can still make money,”** he states.

By incorporating just one cover crop, the Tillage Radish, Cook has experienced 10%-15% yield increases in cereal grain crops. He also says he has seen a 13% reduction in fertilizer costs after continued use of cover cropping.

Ian Gerrish, ranch manager for Cobb Creek Farms in Hillsboro, Texas, says he thinks grazing cover crops is a fantastic strategy and a financially sound choice. “You can easily start putting dollar figures to cover cropping, and it pencils out much better than if you were feeding hay,” he says.

Gerrish produces registered-Angus bulls for Pharo Cattle Co. and manages a commercial-Angus replacement-heifer program. In 2014, the first year of cover cropping for the operation, Gerrish fed 1.5 animal units per acre on cover crops during peak growing season. This spring he expects to increase that number. “We’re running yearling heifers, and they just blow up on it. They do great,” he states.

Cobb Creek’s cool-season cover-crop mix consists of oats, cereal rye, ryegrass, berseem clover, crimson clover, sweet clover, a vetch species and Austrian winter peas. The operation also planted a warm-season mix of sorghum-sudan grass, iron clay peas and black-eyed peas.

Of the cool-season mix Gerrish says, “**Even at 1.5 animal units per acre, they’ll stay growing ahead of you.”**

After one year of cover cropping, in addition to mob grazing, Gerrish has seen a dramatic increase in the water-holding capacity of his soil.

“We stayed a little greener around here. Just after the first cover crop, we stayed greener for five days to a week longer than our neighbors did, who have the same type of soil and the same range grasses,” he noted.

Cover cropping benefits the soil several ways, and it doesn’t mistreat the cattle grazing it, either.

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**Editor’s Note:** Paige Nelson is freelance writer and cattlwoman from Rigby, Idaho.