Honey locust trees growing up through a chisel plow parked by a grove of trees on the McCook County farm of George and Bea Leitheiser indicate how long ago they began no-tilling.

“It must be 10 years since we last used the chisel plow,” says Adam Leitheiser, one of the Leitheisers’ sons.

In fact, George Leitheiser began no-tilling 30 years ago at the urging of his best friend, an Iowa no-tiller. The two men were classmates at South Dakota State University (SDSU), Brookings, SD, and have remained friends ever since. For a long time, the Iowan no-tiller ribbed his South Dakota friend about the costs of tillage.

“He’d ask me, “Do you have some extra diesel fuel that you don’t need?” George recalls with a wry grin. “I started looking at tillage systems from the economics. To till, we’d need more iron. Sure, livestock take time, but if you get rid of your livestock, then what are you going to do? Farm more ground? And we don’t dig up near the rocks that we used to since we began no-tilling.”
The Leitheisers' family farm, by Emery, SD, is comprised of George and Bea, their son, John, along with Adam and his wife, Greta, and their young twin daughters.

The Leitheisers no-till corn and soybeans and grow cover crops that do double duty as forage for livestock. They no-till alfalfa and drill winter wheat and oats to provide a place to spread dry dairy cow manure in the mid-to-late summer months. They also share some equipment and land with George's brother.

George has a herd of Black Angus cows, Adam has Red Angus and the family feeds out beef cattle and dairy steers. George and Bea were thinking of winding down their dairy herd until Adam and Greta moved back to farm with them. The two women help manage the herd of 60 cows, about 90 percent of them Holsteins.

Leitheiser Has Different Perspective

George Leitheiser says he’s heard arguments that no-till won’t work. He looks at things differently.

“Mother Nature doesn’t till and things seem to grow,” says George, who chairs the McCook County Conservation District. “The Leitheisers are a shining example of stewardship and successful production agriculture in an area where there are few other no-till farmers,” says Dan Mehlhaf, District Conservationist with the Natural Resources Conservation Service (NRCS) in McCook County, SD.

George deflects that praise. “We aren’t doing anything that anybody else can’t do,” he says. “It doesn’t matter how many times you succeed, it’s a challenge to repeat it.” There will be both dry spells and wet spells. No-tilling helps the Leitheisers deal with wild swings in the weather.

“When we dried out in 2012, our no-tilled corn wasn’t as terrible compared to conventionally tilled corn-on-corn in nearby field” Adam says. “We had an 80-acre field of no-tilled corn that yielded 80 bushel, while a nearby field of corn-on-corn, where they’d done a lot of tillage, got cut for silage.”

The Leitheisers began using cover crops in 2011 and Adam says they are getting more comfortable with them. “It’s a learning curve still in 2014,” he says. “We’ve planted cover crops after small grains and that’s working for us. But I don’t know if I’m ready to plant cover crops into standing corn and soybeans.”
profiles in soil health

Leitheiser Family Farm, South Dakota

Mother Nature doesn’t till and things seem to grow.

- George Leitheiser, Emery, SD

Their cows like eating the purple top turnips in a turnip-radish mixes. “The cows will dig up the turnips,” Adam says. “The cows are more after the turnips than the radishes.”

In early September 2014, Dan Mehlhaf and Eric Barsness, Conservation Agronomist, NRCS, Brookings, SD, examined the soil quality and soil health of a field of purple top turnips and radishes at the Leitheiser Farm. They performed a series of quick and easy soil health indicators. First, Eric set up an infiltration ring to measure the soils’ infiltration rate. Then, he poured in an inch of water and timed it to see how fast it would infiltrate. The water soaked into the soil quickly and at a rate consistent with other no-till fields in the region.

After that, Barsness dug up and evaluated a spade full of soil in the field. “Healthy soil should look like chocolate cake,” explained Barsness. He pointed out the macro pores in the black soil and looked for white, fuzzy mycelium (good fungi) which can surround the fine, white root hairs from the cover crops.

Plants provide fungi with food in the form of carbohydrates. In exchange, the fungi help crops take in water and provide nutrients like phosphorus and nitrogen, via their mycelia.

NRCS District Conservationist Dan Mehlhaf preparing for an infiltration test in one of the Leitheiser’s no-till field.

NRCS District Conservationist Eric Barsness, Brookings, SD with soil samples from Leitheiser’s no-till field with a diversified cropping rotation.

“There’s actual structure to our soil,” Adam Leitheiser says. “When it rains in the spring and summer, you can get into our no-tilled fields in a day or two. On other conventionally-tilled fields, they’ll still be wet.”

Over the long run, Leitheisers have been happy with the results of their no-till farming system, which includes a diversified crop rotation and cover crops. “Start small or you may have a train wreck in the first years and then people will say, ‘No-till doesn’t work,” George Leitheiser says. “But no-till does work.”

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