

# Connect the Dots

*Les and Jerry Seiler, Fulton County, Ohio*

**W**orking with 30 soil types can be a challenge in the rolling hills and watersheds of the western Lake Erie Basin, which has made headlines for its contribution to the algae bloom in Lake Erie. But for Les Seiler and his brother Jerry, who farm corn, soybeans, alfalfa, wheat and cover crops on 1,400 acres of long-term, continuous no-till in Fulton County, the solution lies in building good soil health.

*“For the last three years, we’ve had covers on every acre – wheat, alfalfa, cereal rye or a mix,” Les says.*

*The brothers, along with their late father, Merle, switched to no-till practices in 1986 to reduce erosion and leaching into the Maumee River watershed.*

*“With some of our slopes as high as 12%, we had surface erosion that turned into gullies, which led to sediment loss. We had to do something different,” Les says.*

*When the brothers started cover cropping in 2009, the big picture began to come into focus. “At that point, our conservation approach became a matter of connecting the dots, and it has continuously improved over time,” Les says.*

*The Seilers are thankful for the field experts they call their “college professors.” In turn, they host their own field days to educate others on conservation methods.*

**Q:** How does adding cover crops help you “connect the dots?”

**A:** Cover crops protect the soil and provide better water infiltration, water-holding capacity and nutrient-holding capacity, all of which increase organic matter (OM) and lead to a reduced need for commercial fertilizers and other inputs. Thus, the dots are connected.

Over time, we’ve seen this increase in OM. We gain a nutrient “credit” through the breakdown of cover crops and residue, and we work to maintain the right levels of soil nutrients. We’ve also been able to cut back on herbicide and eliminate most insecticides, which allows beneficial insects to eat weed seeds and slugs.

Our goal is to keep a living root in the soil all year long, versus just four to five months with the cash crop. This promotes biological activity, which reduces fluctuations in soil temperature. Bare, tilled soil heats up quickly under the sun but also cools down quickly after dark. When an early east wind blows off Lake Erie it will cause cold chill injury to seedlings.

A cereal rye cover crop can actually warm up the ground a couple of inches into the root zone by cycling air, water and sugars through the root system and into the soil. In late November 2016, for example, we had an early 8" snowfall. Within a day or so, we could see the snow over our cover crops melting, while a nearby tilled field was still under a full blanket of snow.

Cover crops are a natural fit for no-till. After years of continuous no-till, the soil will improve so dramatically that the top couple inches becomes almost like potting soil, which ironically makes it vulnerable to erosion. However, the living roots of cover crops help keep the soil intact. We can dig up roots and chase them down to the tile lines. We see a lot of earthworm middens, platy structure and water infiltration, and the soil is not compacted.

**Q:** What kind of paradigm shift is required to embrace your approach to conservation?

**A:** There’s a conventional mindset you must overcome, such as resisting the temptation to break out a tillage tool to dry wet spring soils. You need to get a grip on the concept of soil health in order to understand how just one tillage pass can destroy biological activity in the soil.

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Farmer to Farmer Success Stories are a series of interviews of farmers sharing how they have found success in incorporating conservation into their operation. To follow this series, visit: [www.HarvestingThePotential.org](http://www.HarvestingThePotential.org)

**Q:** Your research has revealed some dramatic improvements. What are some examples?

**A:** It's important for us to conduct research for several reasons. For example, it proves how diversity breaks up the repetitive corn and soybean rotation and subsequent disease cycle. In 2010, we began no-tilling a newly acquired farm with a 30-year history of heavy tillage in corn and soybeans. It broke out with SDS, something we had never dealt with before. We began using a cereal rye cover crop in 2013. Based on 2013 to 2016 soil samples, cyst counts decreased from 34 to 16, and egg counts went from 1,880 to 380. That's a significant accomplishment.

Another example involves two adjacent farms. One farm was planted to wheat, then cover crops, then corn, then back to soybeans. The adjacent control farm had a corn and soybean rotation. The test farm showed a 7/10 of a percent increase in OM.

**Q:** Can you describe some of your cover crop seeding and termination methods?

**A:** We try to seed cover crops into the existing cash crop around Labor Day. Because we're covering every acre, we aerially seed covers into corn and use a highboy on soybeans. It's worth it to get these covers established early.

We have had good success with blends and winter covers such as cereal rye. We've planted crimson clover and a lot of dwarf Essex rape. After wheat we'll typically use a blend, including turnips, radishes and legumes such as winter peas, which need to be established early. The blend breaks down the high-carbon wheat straw and provides nitrogen to feed the microbes.

In spring, we terminate with glyphosate and 2,4-D.

**Q:** Water quality is a huge issue in your area. What are some tools that are helping?

**A:** Our Maumee River watershed is the single biggest polluter into Lake Erie. We're all accountable for the phosphorus situation, and the continuous corn and soybean rotation is probably causing a lot of these issues. But we have a variety of tools to help deal with the problem, and we're all doing the best we can.



In early April 2016, Jerry (left) and Les Seiler examine a cover crop stand planted the first of August 2015 after wheat. It comprises a blend of legumes (Austrian winter peas, three different types of vetch and crimson clover); radishes; turnips; buckwheat; oats; sunflowers; sorghum sudangrass; dwarf essex rape; pearl millet and kale.

Cover crops – and I consider wheat as a cover crop – are important tools. They keep a living root system in the soil to prevent erosion and runoff. The lack of overwintering crops has a large effect on the water quality in Lake Erie. For example, five years ago, our county had 20,000 acres of wheat; last year, that number was cut in half.

Waterways are another tool. On one farm in 2014, the Nature Conservancy helped us replace a winding ditch, which was gnawing away at the banks, with a monitored, two-stage ditch. The project was a tremendous improvement to the farm and the watershed as a whole.

**Q:** How do you measure success in your operation?

**A:** It's very simple: improved soil health. It all points back to connecting the dots of cover crops, no-till and nutrient management.

Yield and profit have a lot to do with success, of course, and we consistently raise above-average yields. The drought of 2012 was probably our most profitable year ever with good yields and great prices. Even before we planted cover crops, no-till practices helped with our soil's water-holding capacity. We're weatherproofing our land.