

Growing The Farm Vertically

Roger Wenning - Greensburg, Indiana

Roger Wenning realized that skyrocketing land prices limited his opportunities to build his farm by expanding beyond the 650 acres he farms with his sister Marita Field and sons Nick and Kevin near Greensburg, Indiana. That pushed his thinking into a new direction. Literally.

“I can’t grow my farm horizontally—land’s too expensive—but I can grow it vertically,” he says. “I can get higher yields with the same inputs, just growing it deeper.”

Growing deeper means building soils for better root growth and higher productivity. That requires a system that combines no-till, drainage, intensive nutrient management, cover crops and careful attention to everything that touches the soil, Wenning says.

“You’ve got to put the whole thing together,” he explains. “Two plus two equals six when you’re doing this. It’s a systems approach.”



Even in the dead of winter, Roger Wenning’s cover crops feed and protect his soils.

Building Systems

“Over the past 20, 25 years I’ve doubled my yields, especially in my poorer ground,” Wenning says. “There’s little, itty-bitty things, and you put them together. I’d add one thing, then it would help me more than it would have on its own. It’s a synergistic effect, though I didn’t know to call it that.”

Wenning was intrigued when he heard about an experimental approach to studying systems by removing one practice rather than adding one. He decided to team up with a crop advisor at his local co-op to try it himself.

“I told my co-op guy, ‘I want 100-bushel beans. Let’s get to it and we’ll figure out what I don’t need,’” he says.

Taking away elements of the standard recommendations for high-yield soybeans helped Wenning zero in on the

Population Boom

Roger Wenning of Greensburg, Indiana, says increasing plant populations has been a very successful component of his no-till program.

He switched to twin-row planting his corn, planting 42,000 to 44,000 plants per acre on average and backing off to 34,000 seeds per acre in poor spots.

“That seems to be our sweet spot,” he says. Still, he hasn’t quit experimenting—Wenning is conducting population trials for several seed companies.

inputs that were contributing most to productivity. The big lesson, he says, is that there is no silver bullet.

“It’s a whole bunch of little things,” he notes.

Wenning says it takes just a couple of years to decide which “little things” to keep doing and which to leave by the wayside.

“I’m not a real science guy,” he admits modestly. “I just try something and if it works this year, I’m going to try a little more. Then I’ll try some more. If it works again, I’m all in.”

Cover Crops

One practice Wenning went all-in for is cover crops. He’d started with the practice in the 1980s to prevent erosion on hilly ground. Today, he’s using cover crops on more land to not only control erosion, but to build soils, improve water infiltration and manage nutrients, too.

So far, he reports, he hasn’t found any mixes after corn and soybeans that top a blend of annual ryegrass, rapeseed and crimson clover. After wheat, he puts in mixes of eight to 12 warm-season cover crops species to add plant diversity. That allows him to take advantage of different types of root systems, varying abilities to scavenge or fix nutrients in the soil, and the ability to build soil organic matter.

Wenning is one of 12 farmers across Indiana hosting strip trials for the Conservation Cropping Systems Initiative (CCSI), a six-year project that explores the environmental, ecological and economic impacts of a variety of conservation practices. Wenning’s CCSI trials compare no-till and strip-till in cover crops.

Feeding the Biology

Wenning samples soil by soil type on a roughly 2.5-acre grid to guide his intensive nutrient management program. Based on soil test results, he applies nutrients, lime and seed with a variable rate spreader, and applies a flat rate of gypsum. However, he's quick to point out that fertilizer and gypsum are just the first steps in a complex process of feeding his crops.

"Back when I was in the hog business, I worked with a nutritionist," Wenning explains. "He taught me that microflora in the gut actually converts feed into usable food. That's what's happening here in the soil. Keep that soil biology healthy and it's like a healthy gut in a hog—it's going to produce the food the plants need. I'm even finding I don't need as much as the soil tests recommend."

Wenning holds off on nitrogen application until right before planting, minimizing the chance to lose N to volatilization, leaching or runoff. He injects two bands of DAP and some nitrogen—two inches and four inches deep—so growing roots can tap into rich veins of nutrients, encouraging plant growth.

"Corn is feeding babies—every kernel is a baby," he notes. "It's like society. If there's an abundant food supply, the population grows. If the corn plant thinks, 'oh, my land, there's food everywhere I go,' it will raise a lot of babies."



Wenning's tile plow yields insight into soil conditions.

Drainage Is Key

Wenning is a huge fan of drainage for a wide range of reasons.

"I think tiling is the key to starting things," he says as he describes his poorly drained, low-organic matter soils. "All your good critters are aerobic. They need to breathe."

"In the late '80s, early '90s, I had trouble with no-till," he adds. "I put tile in, and the no-till worked, and the cover crops started to look good in it."

Better drainage encourages better root growth, Wenning explains. In turn, decomposing roots from previous crops

Talk to Somebody

It takes years to zero in on conservation cropping systems that fit your farm, says Roger Wenning of Greensburg, Indiana. The good news is that the experience of veteran conservation farmers can shorten your learning curve, he notes.

"It took me 25 to 30 years of learning this," he says. "You can do it in five, six, eight years because of people around you who have already tried it."

"Make friends with somebody who's already doing it," Wenning advises. "Ask questions. Most guys will help you. Be honest with them so they can help you."

"Add one or two practices every year, he adds. "It depends on your soils which ones will be most important to you."

feed microbes and fungi in the soil that build fertility and tilth.

The other role tiling plays for Wenning is that he's now a drainage contractor. Running a tile plow on other farms has given him a chance to compare his soils with those of other farmers in the area.

"The feel of it is different," he observes. "Guys who are still into tillage, the water won't go through, the soil's still real hard. It's like modeling clay, like it's dead. When you run a tile plow in tilled soil, it just heaves up and flops down. In long-term no-till, it comes flying up. You'd think, 'why would you need to plow this? It's already loose!' We can get into no-till fields three or four days earlier, and the tile plow pulls a lot easier in no-tilled soils."

Wenning sleeps a lot easier knowing his family's no-tilled soils are building and breathing and improving. With his granddaughter on his knee, he talks about his strongest motivation—his eight grandchildren.

"Fifty years from now, I want them to have good soil and a healthy farm," he says. "That's really my motivating factor—looking to the future for these little ones."

This is part of a series of sheets on the economics of conservation systems developed as part of Indiana's Conservation Cropping Systems Initiative (CCSI) in cooperation with the Conservation Technology Information Center and Purdue University. For more information on the Conservation Cropping Systems Initiative, visit ccsin.org.

CCSI's Partners in Conservation:

Indiana Association of Soil and Water Conservation Districts and the 92 local SWCDs; USDA Natural Resources Conservation Service; Purdue University Cooperative Extension Service; Indiana State Department of Agriculture; State Soil Conservation Board; Indiana Soybean Alliance; Indiana Corn Marketing Council; Conservation Technology Information Center (CTIC); Vincennes University, Jasper Campus; National Fish and Wildlife Foundation; Wabash County SWCD; Dubois County SWCD.

This material is based upon work supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under award number 69-3A75-12-215.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture.

