

UNLOCKING SOIL HEALTH

Organic matter has rapidly decreased in recent history.

The Morrow Plots on the campus of the University of Illinois indicate soil organic matter content in prairie grass borders was 5.5 to 6.5 percent in 1876. Less than half of that is left. That's the case with most prairie soils—oxidation of organic matter from tillage for row crops has reduced organic matter levels to between 2-3 percent today.

Farmers take a cue from nature.

Innovative farmers are breathing new life into their soil by seeding a cocktail mix of 6-12 plants to get diversity above-ground, which creates much-needed diversity below the ground. Through that diversity, farmers are mimicking the soil-building and microbial-friendly conditions of the diverse native prairies.

Roots of some plants can grow three feet deep in 60 days.

Roots of daikon-type radishes are a biological alternative to deep ripping to alleviate soil compaction. After radishes winter kill the channels created by the roots tend to remain open at the surface, improving infiltration, surface drainage and soil warming. The popular cover crop also is an excellent nitrogen scavenger.

Multiple species mean multiple benefits.

The below-ground synergy created by crop rotations and multi-species cover crops can actually accelerate biological time by increasing organic matter, allowing crops to flourish in dry times while monocultures struggle. And as an added bonus, diverse cover crop mixtures work together to crowd out weeds, improve nutrient cycling and reduce plant diseases.

USDA **UNLOCK THE SECRETS IN THE SOIL—A NEW CAMPAIGN FROM USDA'S NATURAL RESOURCES CONSERVATION SERVICE—PROVIDES TOOLS AND KNOWLEDGE TO IMPROVE OUR SOIL HEALTH.**

The Howard G. Buffett Foundation is proud to raise awareness in support of this effort

As world population and food production demands rise, keeping our soil healthy and productive is vital.

By focusing more attention on soil health and by educating producers and the public about the positive impact healthy soils can have on productivity and conservation, we can help our Nation's farmers and ranchers feed the world more profitably and sustainably—now and for generations to come.

**unlock the
SECRETS
IN THE
SOIL**

FARMER PROFILE: DARRYL CROWLEY

11,000 acres in Poplar, Montana

Crops: spring wheat, durum wheat, lentils, peas, canola and garbanzo beans

Planting: all no-till

Covers: cocktail mix that includes canola, radishes, turnips, millet, corn, hairy vetch and small grains



Photo Credit: USDA NRCS

Darryl Crowley, a third generation farmer, pioneered no-till and conservation cropping in his area. “The first 10 years we did this, everyone thought we were silly,” says Crowley. Now, almost 30 years later, most of his neighbors have switched over to a similar system.

While Crowley profits from his cropping system, he has also decreased his expenses. The no-till system, along with precision application methods for applying herbicides and fertilizers which greatly increase efficiency, has decreased his trips over the field. “We went from using between 15,000 and 20,000 gallons of fuel to half that,” he says.

Crowley also raises cattle, which consume some of the crops grown. “Everyone with livestock benefits twice,” Crowley says. Growing cover crops reduces erosion, and grazing these cover crops provides cattle with additional forage.

FARMER PROFILE: LAWRENCE SANCHEZ

300 acres in Adelino, New Mexico

Crops: grass, alfalfa, corn, winter wheat and oats

Planting: No-till and Strip-till

Covers: Most used mixes: fescue, orchardgrass, clovers



Photo Credit: USDA NRCS

Lawrence Sanchez believes everything on his farm begins with healthy soils. “You’ve got to start from a healthy soil if you want superior crops,” he says.

Sanchez, who has never been reluctant to try something new, explains, “You have to be patient in building soil. It’s long-term. It took three years for us to see some effects in soil analysis and in our production. We didn’t see the bigger differences until five years.”

Sanchez believes it is important for farmers to see no-till results firsthand. “If they get out on the land and see for themselves what’s happening, if they dig holes, look at the roots, and look at the covers, they can become convinced. It really requires a hands-on look.”

“Several years ago, a farmer walked across my land with me and said he noticed how soft my ground was. He said it was like my land was cushioned,” Sanchez remarks.

“I’ve always been a conservationist, and I think building soil health just adds onto stewardship,” Sanchez says. “The bottom line is, if I take care of the soil, the soil is going to take care of the plant, and the plant is going to take care of the livestock and me.”

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