

# Long-Term Payoffs: Diversity, Efficiency

Dan DeSutter - Attica, Indiana

Over the past 20 years, Dan DeSutter of Attica, Indiana, has built a national reputation as a proponent of no-till, cover crops and healthy soils, putting his experience as a financial analyst and commodities broker to work assessing the impacts of conservation on his family's farm.

One of 12 Indiana farmers participating in the Conservation Cropping Systems Initiative (CCSI), DeSutter has opened his 4,300-acre crop and grass-fed beef operation to researchers and conservationists as a farm-scale research plot, digging deep into soil quality measurements and profit analysis. The goal: to gather insight into the agronomic and economic benefits of conservation farming systems.

Despite his training and instinct to work in hard numbers, DeSutter says the biggest returns on his investment in conservation will only become apparent in the years to come.

"The biggest payoffs for what we're doing are very long-term," he says. "They don't show up in one year or two years. We manage for that. If there's a short-term benefit, that's great. But we know there's long-term value."



Former analyst Dan DeSutter takes the long view on conservation.

## Dollar Value

"I think there's a benefit from having a mulch on the soil—it's going to increase biological activity, and that's a good thing," DeSutter points out. "How do you put a dollar figure on that? I don't know."

Of course, he's not alone. One of the most ambitious goals of CCSI was to try to put dollars to improvements in soil health. It's difficult work—a masters thesis on the value of cover crops by graduate student Myriam

Bounaffaa, working under agricultural economist Wallace Tyner at Purdue University, detailed the challenges of trying to sort out a wide range of variables on the 82 farm fields she studied. Bounaffaa charted variables that included different soil types, slope, weather, crop rotations, management systems and other factors. In the end, she provided guidance for narrowing down the scope of future experiments, but could not calculate dollars-and-cents profits attributable to cover crops in the CCSI plots.

However, Bounaffaa's thesis included a thorough review of data surrounding key conservation practices used on DeSutter's farm. Some highlights:

- An Iowa study measured 93% and 86% decreases in rill erosion by rye cover crops in 1997 and 1998, respectively. Oat cover crops resulted in decreases in soil loss to rill erosion of 64% and 42% in those years.
- An Indiana study documented corn yield losses of 9% to 18% in highly eroded soils compared to lightly eroded soils. Soybean yields declined 17% to 29% in highly eroded fields.
- A survey of 1,924 farmers from across the U.S. by the Conservation Technology Information Center (CTIC) and the USDA Sustainable Agriculture Research and Education (SARE) program in 2014 reported an average yield increase of 3.2% in corn and 4.6% in soybeans following cover crops.

## Building Soil Organic Matter

Soil organic matter (SOM) stores and steadily releases crop nutrients, holds water, improves infiltration of rainfall into the root zone, improves soil structure and increases yields. Conservation practices such as no-till and cover cropping can dramatically improve soil organic matter levels.

Learn how to assess the health of your soils with an informative set of information sheets from the USDA Natural Resources Conservation Service at <http://tinyurl.com/q9hlvf2>.



DeSutter may not yet be comfortable assigning a dollar figure to his conservation practices, but he notes that he sees the results of 20 years of no-till and a wide range of other conservation practices in the combine hopper.

“The sum of our practices now gives us APH [actual production history] in corn that is 30 to 35% over our county average,” he says.



Cover crops suppress weeds.

## Weed Control Benefits

One short-term benefit DeSutter reports is the value of cover crops in controlling weeds—particularly marestail (horseweed), which is a growing challenge in many parts of the Corn Belt. “Our most effective marestail control is cereal rye,” DeSutter declares. “It’s 95% control. That’s better than any herbicide. Does it totally replace herbicide? Not quite. But it reduces their workload.”

With the constant threat of marestail resistant to glyphosate, ALS inhibitors or both traveling in from nearby fields, DeSutter puts a lot of emphasis on controlling horseweed through a multi-pronged program. He says rotating crops and rotating herbicides—strategies that fit right into his farm-wide emphasis on diversity—is the foundation of his marestail program.

“Don’t give it a good home,” he explains. “Keep it uncomfortable.”

Forcing marestail to compete with his cover crop as well as his cash crops, and backing up the effort with a herbicide has kept marestail from gaining a toehold on his farm, DeSutter says. He notes that he spends as much as \$40 to \$50 per acre on blends of cover crop seed, but in turn is able to keep his herbicide bill below \$15 per acre.

## Nutrient Rich

A major discussion in soil science circles is the value of the crop nutrients contained in soil organic matter (SOM). Long-term no-till and the use of cover crops can rapidly increase levels of soil organic matter, which releases approximately 3% of its nitrogen annually—as well as a portion of its phosphorus, potassium, sulfur and carbon—as it mineralizes.

Estimates of the economic value of the nutrients released from an additional 1% of accumulated SOM can be substantial. The Land Stewardship Project estimates its value at \$15.70 per acre per year. Meanwhile, a figure published in the *Nature and Properties of Soil* calculated a value of \$40 per acre for the 60 pounds of nitrogen released annually in the top 12 inches of soil by every 1% of accumulated soil organic matter.

## Good Things Happening

Barry Fisher, region soil health team leader for the Soil Health Division of the USDA Natural Resources Conservation Service, points out that trying to isolate variables, yield impacts and dollar values in the ever-changing world of real-life farming may never achieve the level of certainty required by scientists. However, he notes that the anecdotal evidence from farmers like Dan DeSutter is powerful. And growing.

“It falls short of hard, fast, replicated data, but it makes me take notice as a producer,” says Fisher, who also operates a no-till farm and grazing operation in west-central Indiana.

Dan DeSutter is certainly convinced by what he’s seen on his farm—and others. “For me,” he says, “it’s enough to know that there are good things happening.”

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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.iaswcd.org](http://ccsin.iaswcd.org).

### CCSI’s Partners in Conservation:

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