



IOWA

PROFILES IN soil health

Wade Mitchell
Buckingham, Iowa
Crops: corn, soybeans
Planting: no-till
Covers: cereal rye, turnips



unlock the
SECRETS
IN THE
SOIL

Good Practices Ensure Healthy Soils.

For most Iowa row crop farmers, weather extremes such as untimely heavy rainstorms and drought are phenomena for which there is little protection. Many believe that hoping and praying for good weather is just part of farming, as is paying for and collecting on crop insurance when yields are poor.

But for a growing number of farmers, this philosophy is changing. More and more Iowa farmers are “growing” their own crop insurance, through soil health management practices like cover crops that protect the soil and crop yields from weather extremes. Crop producers like Wade Mitchell of Buckingham in Tama County are farming with soil health and protection as their primary goal, and producing better yields – naturally.



The Mitchells grow cereal rye cover crops to improve soil health and protect against soil erosion.

Mitchell, who farms with his son Clay, says the soil is his “factory.” “Crop production is based entirely from soil,” he says. “Rain and sunlight are limited by things we can’t control. Things we can control, like soil structure and water holding capacity, are our primary focus.”

Conservation practices like no-till and cover crops increase organic matter levels and biodiversity in

the soil, creating healthier soils that hold water like a sponge, leading to better water infiltration, less runoff, minimal erosion, and reduced flooding and sedimentation.

Mitchell says no-till also sequesters much needed carbon in the soil. "Organic material and carbon sequestration go hand-in-hand," he says. "Normally there are 390 parts per million of carbon dioxide in the atmosphere around here. Once farmers begin fall tillage, that number jumps to 460 parts per million. Tillage releases a tremendous amount of carbon, which is not going to be there to hold water."

Cover Crops

The Mitchells have no-tilled for about 30 years, but recently began incorporating cover crops into their system. They received a Conservation Stewardship Program (CSP) contract through USDA that is rewarding them for years of conservation activities. Part of that contract challenges participants to implement new measures – called enhancements. The Mitchells chose cover crops as one of their CSP enhancements.

For the past four years they have slowly "ramped up" their use of cover crops. They grow cereal and annual rye, along with turnips on the end rows. Wade Mitchell says they primarily grow cover crops to reduce soil erosion in the spring. But they are also receiving "secondary" benefits, like keeping nitrogen in the soil, better soil structure, and carbon sequestration.

Mitchell says the organic material that cover crops provide made a tremendous difference during the 2012 drought. He says corn yields in his region of Tama County varied from 300 bushels per acre for farmers with healthy soils to 50 bushels per acre for farmers with high clay content and poor soil structure. "It was obvious that soils with good structure were aided by the high carbon and organic materials," he said.



Wade Mitchell has farmed for more than four decades, but he continues to learn and try new ways to be a steward of the land using new technology.

He says his soils respond similarly well during wet years. "Our water holding capacity prevents much runoff," says Mitchell. "It takes a lot of water before we get runoff, and when we do the soil properties hold in place. When you no-till it is really evident during wet years like we had (in 2008) when we had three-inch rains followed by four-inch rains."

Larry Jones, district conservationist for USDA's Natural Resources Conservation Service (NRCS) in Toledo, says the Mitchell's attention to soil health management is refreshing and timely. "NRCS was

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- Wade Mitchell, landowner

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Wade Mitchell, Iowa

founded to help farmers conserve soil," he said. "We are now focused on soil health because it is even more all-encompassing. Soil is the foundation for protecting most of our natural resources. Without healthy soils, it's much more difficult to keep pollutants out of water, grow plants naturally, and protect and raise animals."

Chemical Disturbance

Tillage isn't the only way farmers disturb the soil. Misuse of fertilizers and pesticides can also chemically and biologically disturb the soil. When these chemicals are added to the soil, they can make important soil and plant relationships in the soil ineffective.

The Mitchells protect their soils from chemical disturbing practices. As nutrient management innovators, they have worked with the John Deere Innovation Center to conduct research on timing and quantity of nutrient applications. "Research indicated we need to apply fewer chemicals and fertilizers (in the fall)," said Mitchell. "Now we sidedress nitrogen in the spring, dictated by the weather. We are very conscious not to over-apply chemicals."

Overall, Mitchell says the family's focus on soil health makes him feel good about the way they are preserving soil. "Soil erosion is such a detrimental thing," he said. "When it's gone, it's gone. You can't let erosion happen on your farm because it's really not recoverable."



Wade Mitchell (right) tells NRCS District Conservationist Larry Jones how he applies anhydrous ammonia using minimal disturbance methods.

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