



SMART WAY TO GO



SMART-TILL Showcases the Value of Soil Management

HCC, Inc. built the SMART-TILL as a soil management tool that can aerate the soil, break up compaction near the surface, and process residue. The SMART-TILL—with its patented tines, adjustable gangs, and rolling harrow attachment—vertically fractures the soil and processes residue so it decays while tying it down with soil so it doesn't blow or wash away. However these are only the most basic fundamentals and there is much more the SMART-TILL can accomplish on your farm.

A large group of farmer-customers, working independently, have come up with many ways to incorporate the SMART-TILL into their own systems. Representing farms in Indiana, Iowa, and Missouri, the SMART-TILL farmers saw a variety of benefits in their fields.

Steve Cosgray from Monticello, Indiana, said that since he started using a SMART-TILL he gets the benefit of tilling while being a no-tiller. Many no-tillers realize that once in a while their soil needs to get broken up while leaving the residue on the surface. There are not many tools, aside from the SMART-TILL, that can accomplish this.

Cosgray has also experienced better soil conditions in the spring, resulting in a better stand of corn and beans. “We don't have to deal with wet and cool saturated soils like we used to. The soil is drier and our planter performs better,” he said.

The biggest benefit to **Dan Graber**

from Lockridge, Iowa, is that a pass with the SMART-TILL eliminates erosion that comes with conventional tillage. “We get instant water infiltration and it helps the soil hold more water, and in a dry year we do not see any big open cracks in the soil,” he said.

According to SMART-TILL farmer **Nathan Kitzinger** from Titonka, Iowa, “There is not always a yield gain, but we invest less fuel and time, and there are no fine clay particles to settle in, creating a (surface) crust.”

“I get residue management, soil management, and seedbed preparation all with one or two passes and only spending two gallons per acre instead of eight gallons with conventional tillage,” Kitzinger added.

When he takes SMART-TILL to the field, **Chris Deneve** from North Manchester, Indiana, appreciates more earthworms, deeper rooting depths, earlier planting, and the ability to effectively incorporate manure while managing his soil profile.

And **Mark Rathjen** from Walcott, Iowa, and **Eric Heil** from Richmond, Missouri, both agree they have seen an increase in organic matter, improved seedbed conditions and soil tilth, and enhanced no-till.

Natural Soil Builder

Everyone is interested in building the health and tilth of their soil, so they adopt practices like no-till and

planting cover crops.

“We believe our soil health has improved after three years running the SMART-TILL. It makes a good soil better and poor soil good,” Graber said.

While conventional tillage takes the soil, turns it upside down, and destroys structure, Deneve has found that the SMART-TILL actually fractures the soil and leaves a better structure without disturbing the profile or the residue on the surface.

Cosgray explained that he's run other tillage tools: The penetrating types did not penetrate their hard soil, and the surface types weren't designed to penetrate. “We then ran the SMART-TILL,” he said. “It did exactly what it was supposed to do—it penetrated our hard soils while the others couldn't.”

Kitzinger's main goal is building a better soil structure for drainage and aeration in his heavy black soils. “We want to lift and re-aerate the soil 6- to 8-inches deep. This loosens the soil and naturally re-aggregates soil particles into a better structure. This leads to better wicking of moisture to plant roots and greater infiltration, more water storage, less sealing of the soil surface, and eliminates ponding,” he said.

Heil also incorporates SMART-TILL into his soil management regimen. “When I ran the SMART-TILL, the soil became smooth and mellow; in good condition; and had better, more crumbly tilth and soil structure,” he said.

SMART-TILL FARMERS

Seedbed Preparation

The primary reason growers run a disc or finisher in the spring is to open the soil so it warms and dries faster and creates a better seedbed. Cosgray discovered that the SMART-TILL not only vertically tills the profile, but it actually creates both an ideal profile and seedbed, leading to quicker germination, a better stand, and fuller rooting.

Kitzinger adds that eliminating the horizontal cultivation pass and moving to the SMART-TILL makes it easier for the crop to root down after emergence. "It doesn't smear yet eliminates any compaction near the surface," he said.

Residue Management

The SMART-TILL's rolling tines and harrow processes residue in a unique fashion that effectively gets the residue to decay quickly even though it doesn't cut residue into even segments like other rigs do.

"I am impressed with how it manages residue," said Kitzinger. "It does not slice and dice in 4- or 6-inch chunks like other...tillage tools. But if you look at the residue, you can see the cracks and tears, and you will see the pith turning black. Disc blades shear ends and less water gets into the stalk and slows decay."

Cosgray said the tines cut and fracture the residue, but Graber emphasized that it's the harrow that mainly shears and breaks open the stalks and then covers it with a little dirt to tie it down.

"While the SMART-TILL breaks down the stalks, we still have to depend on biology to do the rest, and together they are doing a good job of degrading," Deneve added.

Provides Resilience to Wet or Dry Soils

The Corn Belt just came through one of its worst droughts in recent history and it really hammered corn yields across much of the Midwest. However late summer rains did help soybeans recover. To meet a crop's water needs, farmers need to depend, in part, on what is available in the soil profile. The rule of thumb is 2 inches of moisture per foot of soil and a 6-foot rooting depth that is 12 inches of water. We depend on nature to recharge that profile, and we need to help that process by improving structure to

increase infiltration and water-holding capacity.

SMART-TILL improves structure and infiltration, and one of the first benefits new SMART-TILL customers notice is less water ponding. Graber said that over the past four years they have had a full profile going into the planting season, and the soil was too wet for conventional tillage. However, he was able to plant earlier than his neighbor because he could use the SMART-TILL under those conditions, and his soil dried quickly and was fit for planting sooner.

Rathjen said it is hard to exactly quantify the benefits during the summer. "I see that it opens the soil and builds structure, which increases water infiltration and storage. With more reserves we have more tolerance to drought a few more days," he said.

Kitzinger says he had better soil moisture this summer. "After running the SMART-TILL, rain moves down into the profile leading to more storage. I was a conventional tillage guy for a long time. My soil was hard, tough to till, less water infiltration, and incurred drought stress earlier and my crop died sooner," he said.

Cosgray agrees. He saw the benefit of running the SMART-TILL because his crop hung in there longer this past summer before dying compared to his neighbors.

Makes No-Till Better

"We needed a solution to remedy the effects of continuous no-till," Graber said. "We pioneered no-till in our area in the 1970s, and it used to work well when we had alfalfa in the rotation. However as years went by, our ground got steadily harder as we continued to practice no-till. In low areas water begins to pond and in upper slopes water ran creating rivulets, and it became impossible for us to stay in no-till."

Graber explained that where he had erosion, he used the SMART-TILL to work the soil and noticed that a lot of residue remained on the surface, and the soil was more crumbly and porous than ever before. That sold him.

"I think the SMART-TILL has been a great addition to our no-till system, and we would love to see the NRCS adopt it as a tactic. It makes no-till work," Graber said.

ERIC HEIL

Richmond, Missouri



STEVE COSGRAY

Monticello, Indiana



DAN GRABER

Lockridge, Iowa



NATHAN KITZINGER

Titonka, Iowa



CHRIS DENEVE

North Manchester, Indiana



MARK RATHJEN

Walcott, Iowa

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To learn more about SMART-TILL,
VISIT WWW.SMART-TILL.COM.