INSPIRING SOIL HEALTH IN SAGINAW BAY

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Agriculture is built on healthy soil. To ensure the continued abundance of this vital resource, farmers across the Midwest are increasingly applying soil health practices like crop rotation, reduced tillage and cover crops. These practices, especially when used in tandem, build rich, healthy soil and improve infiltration—helping to insulate yield and profitability from drought, harsh winters and storms year after year.

Here in Michigan, The Nature Conservancy (TNC) shares a common goal with farmers: a thriving and resilient Saginaw Valley. Michigan generates $13 billion each year in products from corn to meat to dairy and provides 22 percent of the state's employment, and much of that is based in over 2.5 million acres of farmland in the Saginaw Bay watershed. This watershed features Michigan's highest concentration of prime farmland, rich soils that allow for more diverse crop rotations and higher yields than many other areas of the Midwest. It's a place worth protecting: for nature and for people.

Saginaw Valley farmers are demonstrating the path to resilience, achieving significant and measurable benefits to on-farm soil composition and structure through targeted soil health practices. TNC partners with these champions of soil health by connecting them with tools, resources and partnerships that set us all up for success—working together to protect the lands and waters on which we all depend.

Farmers are exploring new ways to change practices on the land to help our water. ©Jason Whalen/Fauna Creative

SOIL HEALTH PRACTICES IN THE SAGINAW VALLEY

COVER CROPS

"Cover crops" are planted on fields between rotations of production crops that are grown for market. They temporarily "cover" fields that otherwise would be left bare and susceptible to increased soil loss or compaction between harvest and planting the following spring. Not only do cover crops protect the surface of these fields with vegetative cover, their roots also support a more stable soil structure underground. Cover crops capture and use carbon and nutrients, which are subsequently reincorporated into the soil to replenish lost soil organic matter. The vast and varied combinations of plant species options and planting methods can make adopting cover crops highly customizable to each operation.

Cover Crop Champion: Dan Ritter

Dan Ritter © Jason Whalen/Fauna Creative

"I incorporated sunflowers into my cover crop mix. Sunflowers have a large flower and zinc is required for flowering, so the larger flower you have, the more zinc is made available for the following crop. Once you start down that path and start seeing the results, you might say, 'Gosh, why didn't I do this a long time ago?' I'm using way less commercial fertilizer, way fewer inputs as far as fuel and time."

— **Dan Ritter,** winner of the 2018 Conservation Innovation Award, Elkton, MI

DRAINAGE WATER MANAGEMENT

"Drainage Water Management" allows farmers to manage the water table (how high the groundwater is) in their own fields by "holding back" water in their drainage system as needed. This is done by installing a permanent water control structure on the end of a main or sub-main on a tile drainage system. There, farmers can raise or lower panels to control how much water drains into waterways, allowing them to vary the depth of the water table in the field. When water stays in the soil for a longer period, fewer nutrients are lost into nearby streams, and fields retain more of the nutrients that crops need.

Drainage Water Management Champion: Robert Haag

Robert Haag © Mary Fales/TNC

"For me, soil moisture management was the most important objective. That's why I had the structures installed so I could control how fast or slow the water was leaving this field. Now, it's kind of like I can manipulate the water table level in the field at different times through the year. We're still learning but it's worked out pretty well so far."

— **Robert Haag,** row crop grower & member of TNC's Farmer Advisory Group, Sebewaing, MI

FILTER STRIP

A "Filter strip" is a strip of perennial vegetation planted between a crop production field and an ecologically vulnerable area, such as a stream. These plants cause water to flow more slowly through the area, trapping sediment and allowing nutrients to filter back into the soil rather than enter waterways. The filtering capabilities of filter strips are greatly affected by their width, plant density and the plant species used. Filter strips are considered permanent, usually lasting 10 years or more before they need to be replaced. Often, the areas where filter strips have beneficial applications are already low-producing areas for farmers.

Filter Strip Champion: John Schulz

John Schulz © Mary Fales/TNC

"There's a certain way I want to see my land managed. I try to fit in filter strips where I can and where it makes sense to. In some marginal areas, the filter strips pay better than crop production! I'm actually in the process of widening one of my filter strips right now (now that I'm getting out of farming). Most of mine are along ditches and that helps to create a set-back buffer between the field activities and the water. In other places I've used them to square up an irregularly shaped field."

— **John Schultz,** (ret.) farmer and crop advisor, member of TNC's Farmer Advisory Group, Tuscola County landowner, Unionville, MI

NO-TILL

No-till farming is a method of producing crops with little or no soil tillage (such as plowing). By disturbing the soil as little as possible, farmers can reduce—and nearly eliminate—soil loss by erosion. No-till farming still allows for growing conventional and large-scale row crops. All crops can be successfully grown through no-till methods, though it requires specialized planting equipment and other adjustments—such as cover crops—to reduce competition from weeds.

No-till Champion: Steve Tait

Practices like no-till farming can significantly reduce soil erosion while also keeping carbon stored in the ground. © Jason Whalen/ Fauna Creative

"No-till and cover crops have worked extremely well on our farm. Everything may not be perfect, but we have so much technology to make it work in the placement of nutrients at the right time. The costs are minimal and there are tons of cost savings from not having to till your field, work your field and buy heavy equipment.... I want to build organic matter, build a healthier soil that will regenerate, not be dependent on commercial fertilizer for everything.... I feel that our soil is going to be available in the future if we're doing all the right things now."

— **Steve Tait,** winner of the 2018 Conservation Impact Award, Caseville, MI

NUTRIENT MANAGEMENT

"Nutrient Management" refers to a broad range of activities aimed at improving the efficiency and precision of practices that promote crop productivity, also ultimately reducing nutrient runoff and its impacts. Nutrient management incorporates the "4R" principles and practices: "right rate" (based on actual soil and crop needs), "right place" (applied as close to roots as possible and away from surface water), "right time" (avoiding periods when the risk of runoff is increased, such as right before a rainfall event) and "right source" (using natural nutrient sources such as manure or cover crops whenever feasible). Although the nutrient runoff reductions that can result from these activities are as varied as the practices and approaches, nutrient management overall is regarded as the most effective method for reducing unintended runoff from agricultural fields.

Nutrient Management Champion: Steve Guyari

Managing nutrients is an effective way to reduce unintended runoff from agricultural fields. © Michael D-L Jordan/dlp

"Because of my soil type here, I found I was losing a lot of nutrients through leaching. I don't like doing that because its like flushing money down the drain. Now I try to do all I can to keep it in the field and available for the plants."

— **Steve Gayari,** Saginaw Valley Farmer, Pigeon, MI

STRIP TILLAGE

"Strip Tillage," like no-till, dramatically reduces the amount and intensity of soil tillage on a field and leaves a majority of the crop residue intact. Unlike no-till, however, strip tillage includes cultivation of a thin strip of soil for planting seeds and to help the soil warm up faster. No-till "drills" seeds directly into completely undisturbed soil surfaces, while strip tillage affects about one-third of the field surface while leaving the other two-thirds undisturbed. Strip tillage can be repeated along the same row locations for many consecutive years, while the uncultivated part of the field replenishes the soil's natural function and structure and stores carbon.

Strip Tillage Champion: Ryan & Melissa Shaw

Ryan and Melissa Shaw have implemented new techniques such as strip tillage on their farm and have seen positive results so far. © Jason Whalen/Fauna Creative

"Because strip (or zone) tillage has allowed us to prepare well-formed seed beds and deliver optimally-placed nutrients right to the areas the plants need, our sugar beets and other crops have grown very well and uniformly. It's like they never run out of steam.

"Other benefits we've noticed is that there's been less weed pressure in the strip till fields and a big savings in fuel cost as well. Because only a portion of the field is tilled, weeds have been less likely to grow in the undisturbed areas that are covered with residue. ...Saving fuel and time has given us more opportunity to look at what each field needs individually. We're able to take care of the land and get more out of it."

— **Ryan Shaw,** SKS Farms, member of TNC Farmer Advisory Group, Snover, MI

HOW WE ARE WORKING WITH FARMERS

TNC Saginaw Bay Program Director Mary Fales listens as Aron Buechler explains some of the challenges he faces on his farm.
© Jason Whalen/Fauna Creative

Are you interested in taking strategic conservation steps on your own farm? TNC is committed to connecting farmers with opportunities to build soil health.

Resources. Ask us about conservation programs and resources that might be available to reduce the challenges of implementing new practices. For example, TNC and partners can help farmers identify programs, that offer reimbursement for specific soil health practices.

Information. Join in knowledge-exchange opportunities such as TNC's ongoing learning series, which brings farmers and representatives from agribusiness, academia, conservation and agencies together to discuss topics of mutual interest.

Community. Local leadership and expertise are critical. We encourage those interested to participate in a locally focused farmer-led watershed group, similar to those emerging in other parts of the Midwest, to support collaboration and conversation around shared concerns.

If you or someone you know is interested in participating in these opportunities, or wants to learn more about TNC's work in the Saginaw Bay watershed, please contact us or go online for more information:

(517) 316-0300 | www.nature.org/saginawbay

Chad Dzurka © Michael D-L Jordan/dlp

In spring 2018, TNC held our first Saginaw Bay Watershed Agricultural Conservation Awards Banquet to showcase and award outstanding conservation achievements—and the people making it happen—within the Saginaw Valley.

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