THE VALUE OF KEEPING TOPSOIL IN PLACE

BY: LILIAN SCHAER

In Ontario, farmers are blessed with a diversity of soils and climate conditions that allow them to grow a wide range of crops and support different types of agriculture. To varying degrees, they face common challenges related to drainage, organic matter and fertility – but also deal with conditions unique to their topography and geographic location.

This article is part of a series of profiles highlighting different Ontario farmers, their farms and soils, and how they're addressing the issue of soil health on the land in their care.

Gerard Grubb grows cash crops on a farm in Bruce County he bought in 1978. After exiting the hog industry in the early 2000s, he moved into strictly row crop production, growing corn, soybeans and wheat in a three-crop rotation. He and his wife are now in the process of transitioning the farm to their two sons.

Challenges: eroded knolls, rebuilding organic matter, minimizing top soil erosion, maximizing nutrient efficiency

Soil health practices: No-till/strip-till, cover crops, nutrient application, crop rotation

What are the biggest challenges that you face with respect to soil on your farm and how do they impact yield and productivity?

Movement of topsoil is what I've always been concerned about. Trying to build that organic matter back up is time consuming and it's frustrating because it is so easy to destroy. Tile draining helps but not working the ground is key.

We all should have a cost of production sheet that includes all of our costs. There are estimates that the average farmer is losing three tons of top soil per acre. Our ground here is $10,000 per acre and at six inches thick, my top soil is worth $15 per ton. So that means the average farmer is losing $45 per acre every year. Soil loss is an added cost, but it's so unbelievably hard to measure, so how do we get people to start thinking about how much soil loss costs?

What are some of your practices to promote soil health?

ROTATION

We moved from a corn-soy rotation in the early 2000s to a four-crop rotation: corn, soybeans, wheat and a cover crop. The microbiology in the soil was starting to shift after we had been no-tilling for about four to five years.

COVER CROPS

Cover crop goes on after wheat, a mix that can include oats, cereal rye and clover. Red clover is a must. What I've been finding that works is blowing 30 pounds of oats on red clover. This helps to fill in any areas where the red clover did not establish very well. Towards the end of August is a good time for application to avoid the oats growing too tall and creating slug pressure. By blowing it on, the cost is much lower even if I have to increase by 10 pounds to the acre than it is using a drill.

NO-TILL/STRIP-TILL

I bought this farm in 1978 and it was farmed with conventional tillage until 1982; since then, it hasn't been plowed. We switched completely into straight no-till in the early 2000s, and in 2008, we bought an eight-row strip-tiller. In 2010, we bought a 12-row interplanter but that didn't match with the strip-till, so we rebuilt that into a 12-row strip till and since then we've been using that system. All our starter fertilizer goes on through the air cart in the strip-till. We have tried variable rate fertilizer application with limited success; our problem is we have to upgrade some hydraulic drives.

NUTRIENT USE

Biosolids are starting to become a standard practice for me now, both because of price and from an environmental perspective. My goal is to have biosolids applied once every three years in the red clover or oat cover crops in a three-ton application that will be the base of our fertility (phosphorus) for the next three years. It's in a pelleted form so 50% of the nitrogen will be there for next year's corn crop and the rest carries over into soybean crop.

What is the most important change that you have made on your farm with respect to soil health? Or the one that has had the biggest impact?

The biggest change has been moving to the no-till system. It is keeping my soil in place and improving my water infiltration rate so that water has somewhere to go. My ground is firm but not solid, there are less stones to pick, and I believe I can start planting earlier. I also have less weed pressure, which reduces herbicide costs, and the earthworm population has gone up too. My fuel use and horsepower required to farm an acre is less now. Over time, I believe soil compaction will disappear in the future due to no-till practices and upgrading my flotation tires, which I'm gradually doing.

What advice would you have for other farmers with respect to soil health?

Follow the KIST principle and remember that less is better. Be patient. Rotate your crops. And stay positive, don't always listen to your neighbours – try to find a community of like-minded people.

This project was funded by the Canadian Agricultural Partnership, a five-year federal-provincial-territorial initiative.