

## SOIL THAT'S LEFT ALONE IS A POWERFUL, RESILIENT TOOL

#### **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.



Ken Nixon and his brother farm with their families just north of the city limits of London where they grow corn, soybeans and wheat on relatively uniform silt loam soils. They own, lease and share crop land as well as complete custom work for other farmers.

**Challenges:** Rural-urban relations, erosion on rolling topography, building soil microbiology, compaction

**Soil health practices:** Cover crops, rotation, notill/strip-till, nutrient use, controlled traffic

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

We're close to the city, so a lot of rural residents have purchased land nearby as a place to live but want somebody to manage the rest of their farm. They like to see pretty landscapes; a field of no-till corn stalks isn't what they had in mind. Another challenge is developers who own land and are looking for the most money out of it before building - they're not interested in spending money on municipal drain work or other long-term activities.

### What are some of your practices to promote soil health?

#### NUTRIENT USE

The only place we apply manure is on wheat stubble on dry soil in the summer. I would love plenty of solid beef or dairy manure or poultry litter, but most that we receive is liquid dairy or swine manure. Under the Nutrient Management Act, you don't have to incorporate modest rates of liquid manure into the soil if you have cover crop or crop residues from no-till. We've never incorporated liquid manure; on undisturbed soil with plenty of worm holes and under a canopy of cover crop, most of the odour seems to be captured and gone in 24 hours.

#### **COVER CROPS**

We are still relatively new to cover crops; we primarily use them after wheat in a three to four species mix. Oats are always the backbone and we add and subtract other grasses and broadleaves to round it out. We aren't planting corn green in the spring, that's another level of management we haven't employed yet. We have planted soybeans into cereal rye in the spring and that works well.

#### **NO-TILL/STRIP-TILL**

We first tried planting soybeans into corn stalks as a way of saving labour and equipment costs in the 1990s. We started seeing changes like less erosion and firm, undisturbed soil and the soybeans, although shorter, weren't yielding any less. That was a lightbulb moment. We were still plowing wheat stubble to manage residue and slugs and only no-tilling in the other years. Then our wheat stubble tillage evolved from moldboard to chisel plow and then to disc. In the early 2000s we transitioned to strip-till and now we do two-years of no-till with the third year strip-tilled, so two-thirds of the soil never sees a tillage tool at all. That's when the benefits really started, like residue disappearing more quickly and a reduction in disease pressure. If you leave the soil surface alone, it is a very powerful tool in terms of an ecosystem that will manage itself.

#### **CONTROLLED TRAFFIC**

We've been focused on compaction avoidance and prevention. We have a tramline system that is part of our controlled traffic system. We are 100% there in terms of matching up sprayers, planters and seeders to run in controlled traffic zones. Harvesting equipment, however, is a little more difficult – we have 35 to 40-foot heads for cereals and soybeans, and 20 to 30-foot heads for corn. Getting that plus grain carts all on the same traffic pattern is not easy or convenient.



# 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 adoption of no-till and strip-till. We bought our first no-till drill in 1990 and went to full adoption of striptill in 2007. Our soybeans and wheat are 100% no-till and corn is 100% strip-till. We do not own a plow, a disc, or a cultivator. For us, there were two defining moments: buying our first no-till drill and then completing the cycle by doing strip-till ahead of corn. We're leaving two thirds of our soils completely undisturbed throughout the entire rotation.



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

This is a long-term process with significant rewards. We started reducing tillage in the early 1990s as a way to save labour and money in very lean times – we didn't start to realize the positive environmental and conservation impacts until later and that opened up new understanding. A soil without biology is simply geology.

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