

Raising the bar on soil testing

SoilOptix maps show soil's chemical and physical properties

By **Lilian Schaer**

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A southwestern Ontario company has developed technology that goes far beyond traditional soil sampling to help growers make better soil management decisions. Tavistock-based SoilOptix's system delivers high resolution top soil maps that detail in-field variability of soil's chemical and physical properties.

Why it matters: Rising costs and tight margins combined with growing societal pressure around sustainability mean it's more important than ever to give the soil what it needs by applying inputs precisely and accurately.

The SoilOptix sensor is mounted to an ATV or pick up truck that measures gamma radiation being emitted by the natural decay of the soil as the vehicle passes over the field. Once a field is surveyed, soil samples are taken in very specific locations based on information provided by the logging software.

"We can't taste, smell or feel the radiation coming out of the soil, but the instrument is designed to have the sensitivity to sense it," explains SoilOptix founder and CEO, Paul Raymer. "We are listening to the soil and we're picking up and digitizing that natural energy level."

Sensor data is combined with soil test lab results and the SoilOptix team completes data modelling to generate high resolution digital maps of each field. According to Raymer, the technology is used on a wide spectrum of crops, but particularly on corn, wheat, soybeans and potatoes.

"What we're trying to do is pinpoint pockets of opportunity for the grower to optimize any input they want to amend in their field," Raymer says.

The company's direct customers are co-ops and input suppliers who provide the service to farmers. Each of those partners has the ability to set its own pricing structure for SoilOptix based on the level of service that's being provided.

It's recommended growers complete the sensor readings and extract field samples in year one, with follow up soil samples taken in the same spots in year three before repeating the cycle from the top in year six.

Mosburger Ag, based in Bright and serving Oxford and Waterloo counties, has been a SoilOptix service provider since 2017 when one of their more progressive soil sampling clients began looking for a more robust system.

"I had heard and seen interesting stuff come out of the local SoilOptix business in Tavistock, and my grower agreed to try two 100-acre farms as a demo to let SoilOptix show what their technology could provide us with," says Ashley Mosburger. "The rest is history."

According to Mosburger, the higher resolution of the soil data provides a clearer picture of the different levels of nutrients as well as different textures through the top six inches of soil than conventional soil tests that rely solely on soil sampling.

This lets growers address and predict nutrient deficiencies and weed pressure zones before the crop gets seeded. The high definition images have also been known to shed light on a farm's long forgotten history.

"We often see old farmstead pastures, orchards and building sites long after they've been removed because it picks up nutrient and soil texture changes," Mosburger says. "Today, farms are cleared and the next generation has no idea of the past history of the 50 years before that might be behind problems we're seeing today."

Client feedback has been so overwhelmingly positive that Mosburger Ag stopped offering traditional soil sampling last fall and transitioned to 100 per cent SoilOptix technology.

"The old sampling methods simply can't detect the pockets of challenges we can now find and address," he says.

SoilOptix's largest concentration of service providers is in Ontario, with one each in Eastern and Western Canada. The company also has partnerships in the United States, Mexico, Chile, Argentina, United Kingdom, Germany and Morocco, and participated in last fall's AgriTechnica trade show in Germany to promote their technology internationally.

"We let the marketplace decide if there is merit in this. We want to help the end grower and are trying to raise the bar by leveraging a technology that is passively listening to the soil," Raymer says.

