

ONFARM CASE STUDY

OVERVIEW

The involvement of Mark Richards, a farmer in Dresden, Ont., in the On-Farm Applied Research and Monitoring (ONFARM) program builds on his long history of on-farm research to advance his knowledge and farm management practices.

At Richards Rolling Acres Ltd., Mark grows corn, soybeans, wheat, processing tomatoes and sugar beets. Typically, he uses no-till or strip-till management. Both no-till and strip-till limit soil disturbance; in the latter system, the seed rows are tilled while the area between the rows is left undisturbed.

Mark's experience with on-farm research includes:

- Collaborating with crop protection company representatives on herbicide trials to develop new chemistry labels
- Conducting corn plot trials to test new hybrids to ensure they will perform
- Incorporating strip-till and cover crop techniques into processing tomato production to evaluate differences in crop quality and yields
- Undertaking early pest detection with Ontario Ministry of Agriculture, Food and Rural Affairs staff
- Developing trials to address emerging agronomic challenges with processing tomatoes during the growing season



In 2022, Mark is also conducting a nitrogen trial on sugar beets to measure the effects of timing and rates on quality, quantity, and plant health.

Through his ONFARM research trials, Mark seeks to minimize compaction and improve soil health to optimize productivity and profitability.

Richards Rolling Acres Ltd.



AT A GLANCE

Farmer name: Mark Richards

Location: Dresden, Kent County

BMP: Use of cover crops in a rotation and an organic amendment (solid beef manure) and a combination of both.

WHAT IS ONFARM?

The On-Farm Applied Research and Monitoring (ONFARM) program is completing extensive soil health and water quality analysis on 32 farm sites from across southern Ontario. This network of sites and newly established partnerships will help to build a stronger understanding of best management practices (BMPs) and their effect on soil health and water quality on Ontario farmland.

ONFARM WATER QUALITY DATA COLLECTION

- Investigators led by Don King, Principal and Research Agronomist at the Soil Resource Group (SRG)
- Soil health indicator tests: physical, chemical and biological measurements
- Other baseline soil data: horizons, texture, drainage class, structure characterization, and soil type
- Field landscape and soil degradation assessments, agronomic monitoring, and BMP costing

THE TRIALS

In his ONFARM research, Mark explores the use of cover crops and applications of solid beef manure to improve soil health. He sees the potential for longer-term soil health benefits by using an organic amendment such as beef manure.

In terms of cover crops, “my goal is to have living roots in the soil all year round,” says Mark. He hopes the living roots will enable him to control water and wind erosion and increase microbial activity in his soils.

In 2020, Mark grew soybeans in a minimum-tillage system with half of the plot having received solid beef manure. After the beans were harvested, he planned to plant a cover crop, but conditions were too wet and it was too late in the year.

In 2021, Mark grew sugar beets using a strip-till system. He planted a cover crop at the same time in between the sugar beet rows. This cover crop was a mix of oats and peas in twin rows, and it was terminated one month later. He planned to plant another cover crop in the fall after the sugar beets but faced a challenging harvest season. As a result, Mark deviated from his typical no-till or strip-till system to do some “remedial” deep tillage. He did not get a cover crop planted in the fall.

In the spring of 2022, Mark planned to seed an oat cover crop as early as possible. Then, when the conditions were right, he planned to return to the field to plant corn and terminate the oats about a month later.

This approach would “establish some root growth early on Mark’s lighter soils,” says Don. Mark’s trial is a good example of how BMPs can vary from farm to farm, depending on differences in region, soil type, crop rotation and management.

However, as is often the case when farming, things do not always go according to plan. In the spring of 2022, Mark realized he needed to do another tillage pass and the field conditions were not suitable to plant oats after the tillage. So, Mark refined his plan. Partway through the 2022 growing season, Mark interseeded a cover crop into his corn.

“The best of intentions do not always work out,” says Don. “But Mark has enough experience with cover cropping and ingenuity to still try to get cover crops into his rotation whenever he can.”

Mark’s ONFARM trial included a manure application area. He has a control (i.e., a section of the field with no manure application) and a portion of the field that received a manure application. That way, the ONFARM researchers can study the effects of the organic amendment as well as the use of cover crops on yields and soil health.

The ONFARM research process has been straightforward, says Mark.

“The researchers take care of the measurements and laying out the plot, so it’s been a fairly easy process,” he adds.

THE SUCCESSES AND CHALLENGES OF THE TRIALS

Although very subtle differences exist in the landscape of the ONFARM trial field, Don and his team have seen “some significant differences in soil health,” he says. For example, there are “indications of reduced carbon levels, biological activity, poor soil structure and yield loss on shallow knolls where there are very slight differences in elevation.”

In terms of the specific findings from the use of cover crops and the application of an organic amendment, the ONFARM team has yet to see conclusive results. Mark understands it takes time to see improvements in soil health and believes the soil health is building in the parts of the field that received manure applications.

So far, he is content knowing “that what I’m doing does not harm or hurt the crops or soils and that it is not costing very much,” Mark says. He looks forward to continuing his on-farm research and seeing the results from his 2022 corn trial.

Mark sees farmer-to-farmer networking as the best resource to learn more about improving soil health and implementing BMPs. He is involved in the Ontario Soil Network and the Innovative Farmers Association of Ontario.

“Attending their events has opened my eyes,” Mark says. He also underscores the helpfulness of “tossing ideas around” with other innovative farmers.

