

## Ontario Soil and Crop Improvement Association Partners With Farmers Across Southern Ontario to Conduct Soil Health and Water Quality Research

September 20, 2020  
Guelph, Ontario

The Ontario Soil and Crop Improvement Association (OSCIA) is pleased to announce the establishment of all ONFARM cooperator farm sites. The ONFARM program will complete 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. The Ontario Soil and Crop Improvement Association (OSCIA), the delivery agent for the ONFARM Program on behalf of the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), is pleased to have achieved this major program milestone over the course of spring and summer 2020.

Potential sites were first suggested by OMAFRA's Soils Team and then selected with assistance from Guelph-based Soil Resource Group (SRG). SRG and OSCIA reviewed more than 50 farm sites and assessed criteria that included predominant soil and landscape types across the province as well as factors like crop rotation, tillage practices and farm attributes. Interviewed farmers described challenges on their farms and what goals they saw in improving soil health. Questions such as "how do we quantify soil health, environmentally and economically?" were top of mind. The compiled information was compared in a detailed scoring criteria that was used to find a range of suitable livestock and field crop farms to meet the project goals.

Don King of SRG explains, "All field trial candidates were excellent, but we were looking for sites with regional soil degradation problems where soil health differences could be measured over time from a change in management."

Twenty-five of the cooperating farm sites were selected to study soil health in five regions of the province: Lake Erie West, Lake Erie East, Western, Central, and Eastern Ontario. These 25 sites are focused on paired soil health BMP trials to identify soil health indicators and test effectiveness of BMPs across a variety of soil types, in collaboration with farmers from a range of sectors including livestock and field crops. Paired trials will examine the impact of BMPs such as cover crops, several forms of reduced tillage, and adding organic amendments to understand their effects on soil health indicators in different soils across the province. These BMPs will be used together in different combinations to best evaluate their effectiveness across time, soil conditions and crop rotations. Different cover crops such as crimson clover, cereal rye and oats will be planted with or without organic amendments using different timing, application and tillage methods. Most importantly, these trials will occur on working farms and will be managed by the cooperators themselves, driven by their questions and plans.



*ONFARM site investigating chemical, physical and biological indicators of soil health from interseeding cover crop and reduced tillage treatment*

Jennifer Doelman is a Renfrew County farmer who farms a diverse crop rotation including forage peas, spring cereals and sunflowers. Science and sustainability are core values with an emphasis on farm-based research, market development and good integrated pest management strategies. Since Jennifer began farming in 2006, she has learned the value of good soil health as a primary driver in her farm's resiliency and profitability. Jennifer is growing a rotation of winter wheat and corn while involved in ONFARM and will be implementing oat and cereal rye cover crops and using organic amendments on the site in one year. Tillage will not be used on the site during the trial.

Jennifer is excited about what ONFARM will help her farm accomplish, saying,

“Ontario is a large and diverse province. It’s really important for our management team to understand if there are any regional differences in how our soils respond to industry-recognized best management practices - both in terms of our farm's soil health practices or even the effect of our local microclimate. It is exciting to be part of a network of other farms that share similar goals of improving best management practices and soil health. Working with these great researchers- who are making sure that our on-farm efforts capture good quality, relevant data is an added bonus.”

Nick Stokman is a Middlesex county farmer. The fields where ONFARM trials are taking place were acquired by Nick in 2011 and had been conventionally farmed unlike Nick’s fields, which have not seen primary tillage for 30 years. Nick is growing a rotation of winter wheat, corn and soybeans on the project site and will be planting cover crops, applying organic amendments in one year, and using no-till and strip tillage throughout the trial as well.

Nick is positive about being involved in ONFARM, stating, “Having been involved with the Middlesex SCIA demonstration farm for many years has shown me the value of quality on farm trials. If trials that I was planning on doing anyway, with some additions or modifications, could yield more detailed information by being involved with the ONFARM project, that would be a win-win situation, for the researchers, the greater agricultural community, and for me. With the ONFARM project I hope to learn more about how production practices, mine included, can improve the health and productivity of the soils on the project field, and by extension on other producers’ farms as well.”

Dr. Angela Straathof, soils expert and Program Director with OSCIA, is impressed with the roster of cooperators assembled. “I’m incredibly inspired by the enthusiasm coming from our cooperator farmers,” Angela says. “They are truly the engine of this program, and to have brought on such quality sites in short order is a testament to the relevance of the questions ONFARM is asking about soil health. Soil Resource Group can’t be commended enough for their dedication to securing sites this season, and their ability to hear the concerns of the producers and align them with the objectives of the program.”



*ONFARM site investigating the soil health impact on historic tillage erosion from cover crop and organic amendment treatment*



In addition to the 25 paired soil health research sites, seven Edge of Field (EOF) monitoring sites have been established in six subwatersheds of the Lake Erie and Lake Huron Basins. These seven sites will examine key soil health indicators and monitor the impact that different BMPs and agricultural practices have on nutrient loading and water quality. These efforts will build upon work completed under the Great Lakes Agricultural Stewardship Initiative (GLASI) and will also be conducted on working farms, coordinated by the local Conservation Authority (CA). EOF site cooperators are working with conservation authorities who will measure water quality and quantity parameters regarding phosphorous reduction. OSCIA is fortunate to have established monitoring plans with Ausable Bayfield CA, Essex Region CA, Lower Thames Valley CA, Maitland Valley CA, and Upper Thames River CA.

Craig Merkley, who works with a team of extension services staff at the Upper Thames River Conservation Authority, is excited to continue working with the many partners involved in the ONFARM project.

“The CAs bring a wealth of water quality monitoring experience from previous watershed-based demonstration projects,” says Merkley. “It is always rewarding to work closely with farmers and increase the understanding of how a suite of in-field best practices can measurably reduce water quality impacts on local watercourses and ultimately improve the water quality in our Great Lakes.”

Alan Willits is the president of the Huron County SCIA, which farms a 47 acre site at the Huronview Demo Farm. It is one of several sites in Ontario where farmers are coming together with other partners to develop and demonstrate science-based agricultural practices that produce plentiful crops while improving soil health and protecting the environment. Land management practices include nutrient management, reduced tillage and cover crops while structural projects include water and sediment control basins, terraces, grassed buffer strips and waterways, constructed wetlands, and tree planting. There are also drainage innovations being implemented, including diversion terraces, wetlands, contour tiling, control gates, and pattern tiling. The goal is to determine the effects on crop yield, soil health and water quality with an emphasis on clean water going into creeks and rivers.

Alan recognizes the opportunities provided through ONFARM: “All of us working on the Huronview Demo Farm are grateful for the multi-year support for this important project. This support is making it possible for us to learn the effects of reduced tillage, cover crops and drainage innovations on preserving water quality.”

Work is underway to verify and validate soil health indicators at cooperator sites, and data analysis will determine multi-year crop and economic effects of the selected BMPs. ONFARM’s knowledge sharing and technology transfer activities will complement the efforts of farmers, landowners, Conservation Authorities, and non-government organizations to increase the adoption of BMPs and enhance soil health on farms. Furthermore, ONFARM will lay the groundwork for a long-term, viable network of demonstration farms to serve as outreach and education sites for Ontario’s agricultural industry. Project information, results, videos, photos, articles, and reports will be shared on the ONFARM website at [osciaresearch.org/onfarm](https://osciaresearch.org/onfarm).

The On-Farm Applied Research and Monitoring (ONFARM) program is a four-year, applied research initiative delivered by OSCIA on behalf of OMAFRA to support soil health and water quality research across farms in Ontario. This program is funded by the Canadian Agricultural Partnership, a federal-provincial-territorial initiative.



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