

NEW HORIZONS

Ontario's Draft

Agricultural Soil Health and Conservation Strategy

Highlights

Visit ontario.ca/soil to access the full document and for information about how to provide input

Healthy Agricultural Soil for a Healthy Future

Healthy soil is essential for life and is the heart of our food system. Healthy soil:

- Helps improve crop growth and increases yields and product quality;
- Improves the rate at which soil absorbs and stores water, and reduces runoff, all of which enhance crop growth and resilience when water is in short supply;
- Helps protect water quality by retaining nutrients (e.g., phosphorus, nitrogen) for crops that might otherwise run off the land into adjacent streams and lakes;
- Can reduce greenhouse gas emissions through actions that improve soil health and mitigate climate change;
- Improves resilience to the impacts of climate change such as more extreme temperatures and weather events; and
- Can increase the number of beneficial insects and other soil organisms while reducing pests, thereby contributing to biodiversity and healthier, more resilient ecosystems.



Why Do We Need a Soil Strategy?

In Ontario, as elsewhere around the world, soil is at risk from many threats, including:

- Increased demands on soils to grow food and bioproducts for an increasing provincial and global population;
- Changes in cropping, tillage and other practices that can degrade soil health;
- Pressure on farmers to balance short-term economic gain with long-term benefits of investing in soil health and conservation; and
- Increased frequency of extreme weather due to climate change, which can speed up soil degradation.

Building on Success

This proposed strategy builds on the Sustaining Ontario's Agricultural Soils: Towards a Shared Vision discussion document and incorporates feedback from our agricultural and academic communities, as well as technical experts, Indigenous communities, partner organizations and the public.

A community of champions across Ontario have been and continue to be deeply involved in activities that build healthy agricultural soil. Ontario's Draft Soil Health and Conservation Strategy captures and builds on all of this good work, as well as the work of partners, in one cohesive framework.

The final strategy will be a long-term framework, spanning 2018 to 2030, to guide soil health action, research, investments and activities for decades to come.



Overview of the Strategy

Vision: Healthy agricultural soils contribute to a productive economy, sustainable environment and thriving society

The strategy is presented in four overarching themes:

- 1. Soil Management**
- 2. Soil Data and Mapping**
- 3. Soil Evaluation and Monitoring**
- 4. Soil Knowledge and Innovation**

Soil Management

Improving soil health is not a one-size-fits-all endeavour. Soils in Ontario, even within a field, are often highly variable. The state of soil health also varies widely, depending on past management practices. This is why farmers are best placed to make soil management decisions based on their understanding of their fields and crops, their soil test data, the information and tools available, and what works best for their operation.

Overview of Proposed Actions



Support soil BMP development and adoption

- Expand development, enhancement and promotion of soil BMPs
- Identify and address barriers to BMP adoption, general barriers and barriers for specific BMPs

Diversify crop rotations

- Grow markets for crops like hay, cereals, perennial biomass crops to diversify crop rotations

Support conservation tillage options

- Promote, research and support adoption of conservation tillage such as no-till and strip till

Foster expansion of cover crop adoption

- Implement Ontario Cover Crops Strategy to encourage widespread adoption of cover crops
- Promote, develop and support cover crops through awareness, education and incentives

Build use of organic soil amendments

- Promote, develop and support the use of organic amendments
- Explore web tools for sourcing organic amendment material

Promote erosion assessment & erosion prevention/ mitigation BMPs

- Promote both agronomic and structural erosion control measures
- Develop erosion assessment and analytical tools

Build awareness & capacity to assess compaction risks

- Raise awareness of compaction risks with farmers and agri-business
- Help farmers assess their compaction risk and identify solutions



Expand and improve soil risk assessment/ planning tools

- Improve soil-related aspects of planning tools like Environmental Farm Plan
- Expand geographical availability of Farmland Health Check Up tools
- Develop detailed soil risk assessment tool to help interested farmers dig deeper

Enhance incentives for soil health

- Expand enhanced cost-share funding for soil BMPs to across the province
- Support on farm trials for farmers to start small, try new practices
- Encourage willing farmers to test innovative soil health practices
- Examine potential of other government agricultural programs to encourage soil care

Build climate initiatives that improve soil health

- Support development of carbon offset protocols that improve soil health
- Develop initiative to reduce emissions and benefit soil under the Climate Change Action Plan

Soil Data & Mapping

Good decisions rely on good data. Technology is becoming increasingly integral to and used in agricultural operations. Information on soils and land is important for farmers to make management decisions. Farmers need better access to data, soil interpretative maps, soil maps, and information to support their on-farm decision-making so they can remain competitive in the global market. Policy makers also need access to soil interpretations, data and information for decision-making, including land-use planning.



Overview of Proposed Actions

Modernize soil maps and inventory

- Complete soil map updates over 20 year cycle
- Continue updates to the Class 1-7 agriculture land classification maps
- Complete LiDAR coverage for farmland for soil mapping, tools and resource management
- Establish advisory committee to advise on priority areas for soil mapping

Build and make available soil databases

- Make existing and next generation soil data available on a public, digital platform
- Develop a business case for development of a Soil Information System
- Standardize soil data collection, storage and maintenance

Explore new technology for soils

- Explore use of remote sensing data for soils
- Explore new technology like airborne or hand-held sensors to assess soil properties

Explore better use of soil sample data and precision agriculture data

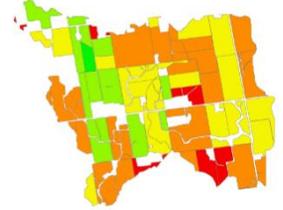
- Explore how to move toward greater accessibility of soil test data
- Work with partners to explore data use and sharing from precision agriculture

Determine baseline for soil management practices in Ontario

- Compile data to document current soil management practices in Ontario

Soil Evaluation & Monitoring

We can only manage what we understand. We need to assess the state of agricultural soil health over the varying landscapes of Ontario and track changes over time. To do that, we need the right metrics and tools to apply at different scales: at the farm, over different regions and across the province.



Overview of Proposed Actions

Make available farm-scale Soil Health Tests

- Create farm-level, all-in-one education tool kit for soil assessment for farmers.
- Explore opportunities for a more consistent approach to soil organic matter analysis
- Promote importance of soil organic matter as a way to monitor soil health
- Implement an Ontario soil health test in collaboration with laboratories over next five years

Expand soil erosion assessment tools

- Expand OMAFRA's and partners' capacity in best soil erosion assessment tools

Assess soil health at regional scale

- Explore continuation and expansion of watershed soil health assessments
- Expand assessment of soil health in water quality assessments

Adopt indicators of soil health and conservation

- Adapt federal indicators for soil organic carbon, erosion risk, soil cover to finer scale
- Examine options to track and report on changes in soil carbon

Explore use of targets for soil health and conservation

- Adopt long-term provincial targets: to increase soil organic carbon, to reduce soil erosion risk and to increase soil cover
- Use AAFC soil indicators to track improvement in soil organic carbon, erosion risk and soil cover
- Promote voluntary soil organic matter targets for different farm soil types:
 - 2.5% for Sandy Soils, 3.5% for Sandy Loams, 4% for Loam Soils, 4.5% for Clay Loams and Clay Soils
- Promote practice-based targets as suggestions for farmers:
 - At least 3 crops in a rotation (for annual cropping systems)
 - 50% of a farm's annual cropland has a cover crop
- Evaluate changes in benchmarked soil profiles across the province
- Examine the potential for monitoring of permanent soil plots across Ontario

Soil Knowledge & Innovation

Getting the best available knowledge in the hands of decision makers can lead to the best decisions. Knowing how to manage soils and understanding how soils function is key to their productivity and long-term sustainability. We need to work together to ensure that lessons from research and the field are shared and incorporated into the development of effective programs and policies. We also need to ensure that knowledge about building healthy soils gets into the hands of people who can best use it: farmers and the people they work with.



Overview of Proposed Actions

Support long-term collaborative soil research

- Support identified soil research priority topics through research programs
- Target funding for longer term soil research projects (>3 years)
- Explore long-term funding of cropland research areas for soil research
- Strengthen industry, government and inter-jurisdictional research collaboration

Use research facilities to boost tech transfer

- Continue to develop Elora Soil Health Interpretative Centre as knowledge hub
- Increase knowledge transfer with farmers through research facilities
- Explore role of research facilities within demonstration farm network

Ensure soil data collection at research sites

- Identify what soil data is needed and how to collect soil data
- Ensure soil data collected at research plots and housed in accessible database

Diversify learning tools available to farmers

- Increase the variety of communication tools used to connect with farmers
- Create online go-to information hub for farmers to get latest knowledge
- Develop a series of videos profiling farmers and practice
- Deliver webinars and podcasts to share local and broader expertise
- Increase hands-on soils learning for farmers at learning sessions

Build capacity for peer-to-peer learning

- Establish, fund and support peer-to-peer learning groups
- Build capacity among farmers as champions for soil health with peers

Build soil knowledge among service providers

- Build capacity for one-on-one technical expertise with service providers
- Establish a demonstration farm network across Ontario
- Develop further training for soils information users
- OMAFRA help partner organizations develop soil-health focused workshops

Ensure soil-related skills provided in post-secondary education

- Engage universities/colleges in review of technical skills and knowledge needs, current courses/programs and develop strategies to address gaps
- Consider new soil internships in government, industry and farm organizations

Ensure elementary/secondary education provides sound basic soils knowledge

- Assess need for revised, additional materials to support elementary/ secondary education on soils

Farmers Reaping the Rewards of Soil Care

No-till, rotation, cover
crops, manure



Eric & Max Kaiser



Long term no-till

Barrie brothers



Systems approach
Soil maps, compost, reduced tillage

Schuyler family



Diverse crop rotations

Dave van Segbrook

We welcome your ideas on the draft strategy by December 31, 2017.

You may submit comments a number of ways:

- Access the draft strategy and complete a feedback form online at ontario.ca/soil
- Email your comments to soilhealth@ontario.ca
- Participate in an open house meeting with soil experts from the Ontario Ministry of Agriculture, Food and Rural Affairs
- Submit your comments through the Environmental Registry at ontario.ca/ebr (registry number 013-1373)



No-till & cover crops

Sara & Chris Wood