

Developing Ontario's Agricultural Soil Health and Conservation Strategy

Ontario Ministry of Agriculture, Food and Rural Affairs

January 2017



- Provide background on development of a soil strategy
- Outline the process for developing the soil strategy
- Outline the four theme areas
- Goals and objectives for each theme area
- Discussion

Linkages: Economics, Soil, Water, Climate & Land



Agri-food growth challenge

Productivity

Local food

Profits, jobs

Trade, exports



wth Drought / Floods

Access to water

Water Protection

Phosphorus / Algal Blooms

Domestic Action Plan

Research Policy Stewardship Education



Soil organic matter

Soil biodiversity

Soil structure

Fertility

Erosion



Extreme adverse weather

Greenhouse gas emissions

Adaptation

Climate Change Action Plan



Land use planning

Provincial Policy Statement

Provincial Plan Review

Agricultural systems



Need for Shared Vision & Strategy

SHARED LEADERSHIP between government, agriculture industry and other partners in ensuring long-term productivity of agricultural soils.

- Partnerships led to major progress in adoption of soil management BMPs.
- Changes in tillage and other practices may be affecting soil health.
- Soil degradation can reduce productivity (as much as 40+% yield loss).
- Climate change is increasing risks (extreme weather, more erosion, drought).
- Changing government priorities & capacity to provide data, advice, analysis.

SHARED INTEREST in capacity to feed and supply growing population by:

- Sustaining the productive capacity of our agricultural soils
- Ensuring availability of data, knowledge, tools and capacity to manage soils sustainably.



A Collaborative Approach

Ir

- Collaborative approach reflects shared responsibility.
- Strategy should reflect shared responsibility and gain support from farmers, farm groups and other partners.
- Technical working group.
 - Farm groups, academia, conservation groups, federal government.
 - Helped develop Discussion Document.
 - Build support and shared responsibility.



Soil Strategy Development Process



Benefits of Soil Health



Pressures on Agricultural Soils

In 2011, AAFC estimated **57%** of Ontario farmland was in a **moderate-very high erosion risk** category and **82%** was **losing organic matter**.



Changing Crop Trends 1976-2011



Source: Statistics Canada, Census of Agriculture.

- Increasing percentage of land in annual crops:
 - 28% to 57% 1976-2011.
- Long-term increases in soybeans, wheat and corn.
- Decreases in perennial forage crops for livestock feed.
- Simplified crop rotations.
- Larger fields, fencerows removed.
- Larger, faster equipment.
- Market-driven changes.
- Similar to other jurisdictions.

What Practices Conserve + Build Soil Health?

- Principles:
 - Minimize soil disturbance
 - Keep soil covered
 - Diversify crops, plant cover
 - Living roots in soil year round as much as possible
- Depending on commodity, soil and conditions, key practices can include:
 - Diverse crop rotations
 - Cover crops
 - Reduced-till / no-till, residue management
 - Organic amendments
 - Buffer strips, windbreaks, wind strips, grass waterways
 - Erosion control structures
 - Reducing compaction



Building on Current Activities

- Education and Technology Transfer on soil best practices
 - Technical advice
 - Publications, workshops, meetings
- Risk assessment
 - Environmental Farm Planning
 - Identification of risks to soil
 - Promotion of soil best practices
 - Farmland Health Check Up
- Cost sharing on soil practice changes
 - Growing Forward 2
 - Great Lakes Agriculture Stewardship Initiative
 - Conservation Authority programs
- Soil inventory and mapping
- Research University of Guelph, government, Industry



Fairview Farms: Elgie Family, Dresden

- Mixed farming (85 steers, vegetables field crops, maple syrup)
- Most of 700 acres in cover crops –rye, oilseed radish, buckwheat, red clover
- Manure from on and off farm, applied to fields to maintain soil health
- Reduced tillage system
- Soil health is high, reduced need for Nitrogen fertilizer



Photos: Soil Conservation Council of Canada, Farm and Food Care, OMAFRA

Vollmershausen Farms (Innerkip)

- Vollmershausen family received 2016 Soil Champion award from Ontario Soil and Crop Improvement Association.
- Farm near Innerkip, Oxford County for six generations.
- "As farmers, it is our responsibility to manage the land and look after soil," Tyler Vollmershausen
- Strip till, no till, and cover crops.
- Influenced by a presentation by soil expert Dr. Jill Clapperton
- "In one presentation, she completely changed the way we view agriculture".



Van Segbrook Family, Tupperville, ON

- Vegetables (peppers, brussel sprouts, sugar beets) & field crops
- 1700 acres in Chatham-Kent,
 200 ac planted in cover crops
- Cover crops broadcast old fertilizer spreader, lightly disked into soil
- Complex crop rotations
- Vegetable = little residue, cover crops increase biomass and organic matter
- Cover crops reduce soil erosion and weed pressure



Acres	Field	2012	2011	2010	2009	2008	2007	2006	2005
96	Caron	sweet corn	soys	Wheat SWW	Soy	Sugar Beet RR	RRSoy seed	Sweet Corn	Wheat
			sprout50/pep3						
82	Dewolf	Corn/Malcom	0	corn/Malcom	Tomato/pep 25	Corn/ Malcom	Brussel sprout	Corn	Tomato
	EVS							Pooto	
51	Cemetery	Corn P1184	sprouts	soy LL	Peas	Brussel Sprouts	Sweet Corn	beels	Corn
51	EVS Shop	Corn P1184	sprouts	soy LL	Brussel Sprout	Soys RR	Corn	Beets	Crowe-Soy RR
51	Terpac	Corn P1184	beets ach 808	corn	Brussel Sprout	Peas/ soy RR	Sweet Corn	Beets	Seed Soy RR

Buis Family – Niagara-on-the-Lake

- Grape grower, 400 acres of wine grapes & tender fruit
- Off-farm manure brought in to build soil health
- Reduced tillage system
- Encourages soil cover on lighter sandy-loams





Soil Management

Soil Information & Mapping

Draft Vision:

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

Soil Monitoring & Modelling

Soil Knowledge & Innovation







Soil Management

Soil Management theme includes:

- On-the-farm soil management & cropping practices
- BMPs such as those illustrated
- Factors influencing adoption of BMPs
- Policy and incentives suitable to influence adoption of BMPs (e.g. crop insurance, cost-sharing)



Cover Crops



Crop rotation



No Till



Organic amendments



Wind strips





Objectives

Soil management practices sustain soil health and productivity for societal, economic and environmental needs



Soil health is sustained and enhanced to keep farmland productive

Soil erosion from tillage, water and wind is minimized



Soil is conserved to support production of, and access to, food and other products



Soil health is enhanced to improve water quality, reduce greenhouse gas emissions and address other environmental issues Soil Information & Mapping theme includes:

- Capacity to access and use the best soil data for decision-making
- Soil resource inventory & mapping
- Next generation soil maps (with LiDAR)
- Remotely sensed information
- Soil test databases
- Precision ag data









Precision ag data

Soil Information & Mapping







Reliable soils information and tools are available to allow for informed decision-making and analysis by producers, industry, government and the public



Soil inventory data are well documented, replicable and defensible



Soil information is comprehensive, accessible, flexible and widely available



Accessible soil data provide for a wide range of analysis and decision-making

Soil Monitoring & Modelling theme includes:

- Capacity to assess trends in soil health and conservation at different scales
- Federal agri-environmental indicators for soil
- Potential farm-scale soil health tests & trends

Watershed scale

• Some watershed-scale soil health & erosion analyses



Farm-scale Soil Health Assessment





Health and status of Ontario's agricultural soils are tracked over time





Capacity is developed to track changes in agricultural soil health, erosion and soil organic matter



Soil health and erosion monitoring is used to inform and evaluate policy and programs Soil Knowledge & Innovation theme includes:

- Human resources, skilled professionals in soils
- Education & training in soils
- **Research on soils**

Tech Transfer

Extension/ tech transfer regarding soils

Education







Soil Knowledge & Innovation



Research





bjective

Soil knowledge and skills are optimized to meet societal and economic needs and drive innovation



Sustain human resource capacity in soils knowledge to meet priorities



The education sector supports programs for appropriate soils knowledge and skills



Ongoing research supports innovation in soil knowledge and management



Industry has access to people with soilrelated knowledge and skills to meet client needs effectively and economically



Producers have access to knowledge needed to maintain and enhance soil health



- Consultation completed November 27 on soil discussion paper
- Continue work with technical working group, includes OSCIA representative.
- Release draft soil strategy summer 2017
- Another round of consultation