4R Certification in Ontario

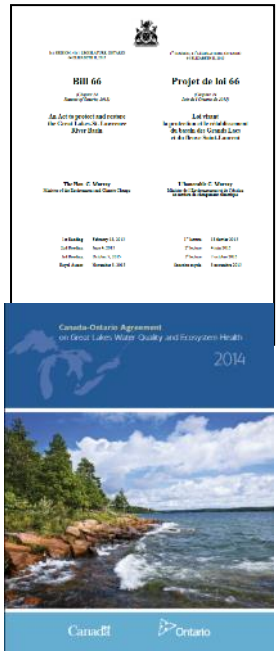
Dale Cowan CCA.On 4 R NMS

Agronomy Strategy Manager
Senior Agronomist
AGRIS Cooperative

Nicole Rabe, Program Analyst

Program Coordination,
Research and Partnerships Unit
Environmental Management
Branch

OMAFRA's Role in Great Lakes

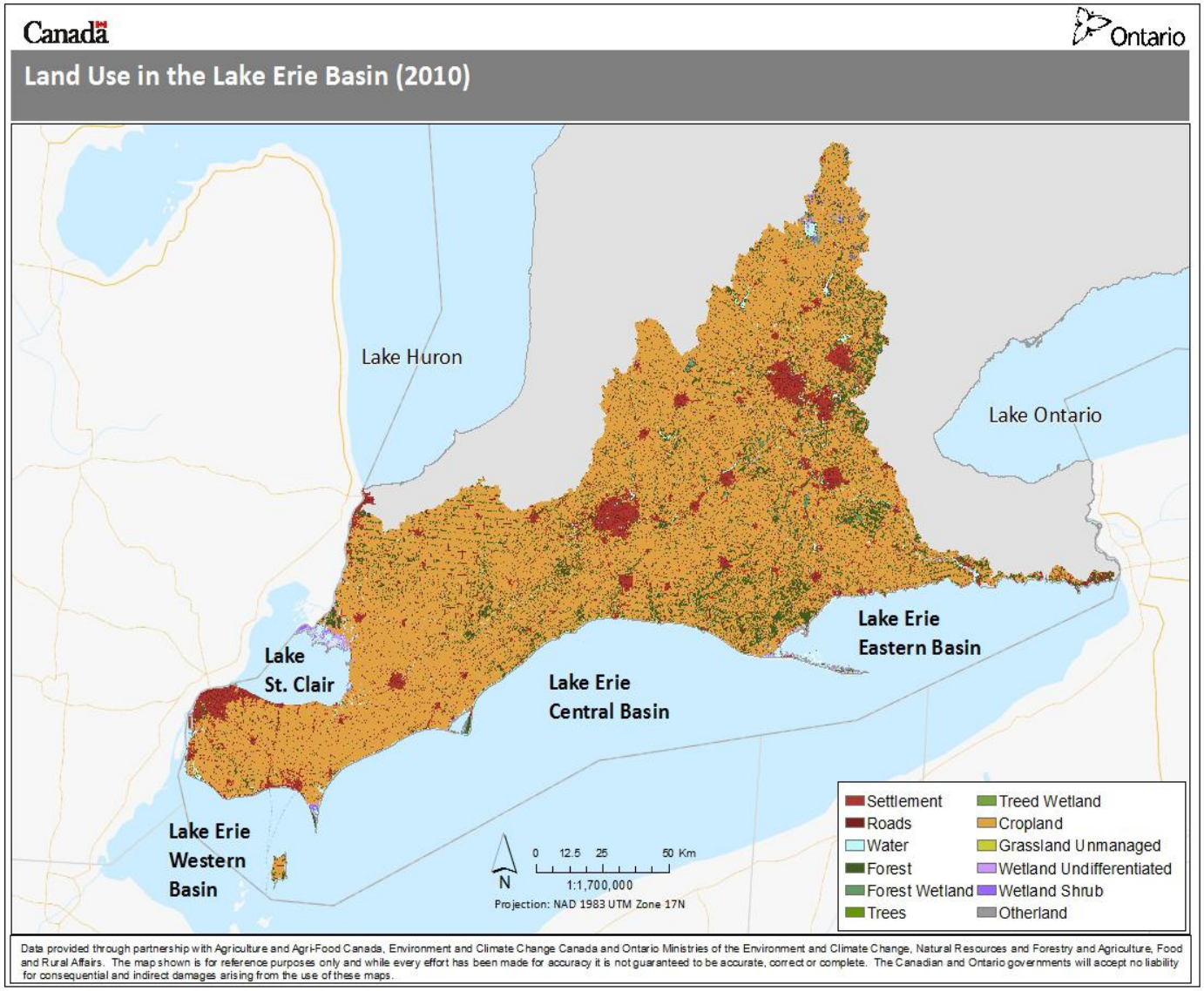


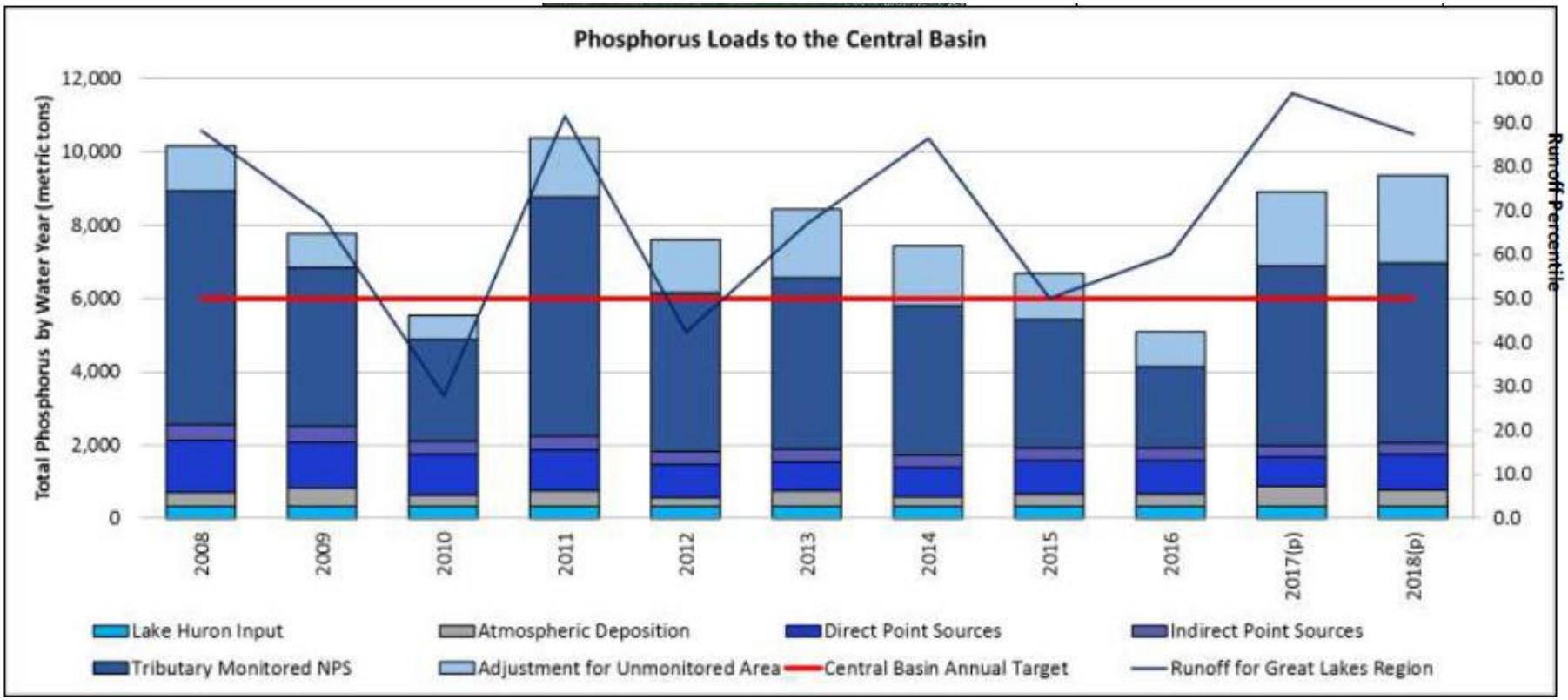
- *Great Lakes Protection Act*
  - Great Lakes Guardians' Council: Minister of OMAFRA is invited as a Great Lakes Minister
- Canada Ontario Agreement for Great Lakes Water Quality and Ecosystem Health (signed December 2014 and *expires December 2019*)
  - OMAFRA is a signatory to COA.
  - Member of COA Executive
  - Co-Lead for COA Annex 1 Nutrients (with ECCC, MOECP)
- Great Lakes Water Quality Agreement (signed 2012)
  - Member of Great Lakes Executive Committee
  - Member of Annex 4 Nutrients Subcommittee
- Great Lakes Commission
  - Associate Commissioner

40% phosphorus load reduction by 2025 for the **Ontario portion of the western and central basins** of Lake Erie, as well as an aspirational interim goal of a 20 percent reduction by 2020

Great Lakes Commission des Grands Lacs

Ontario's agricultural heartland





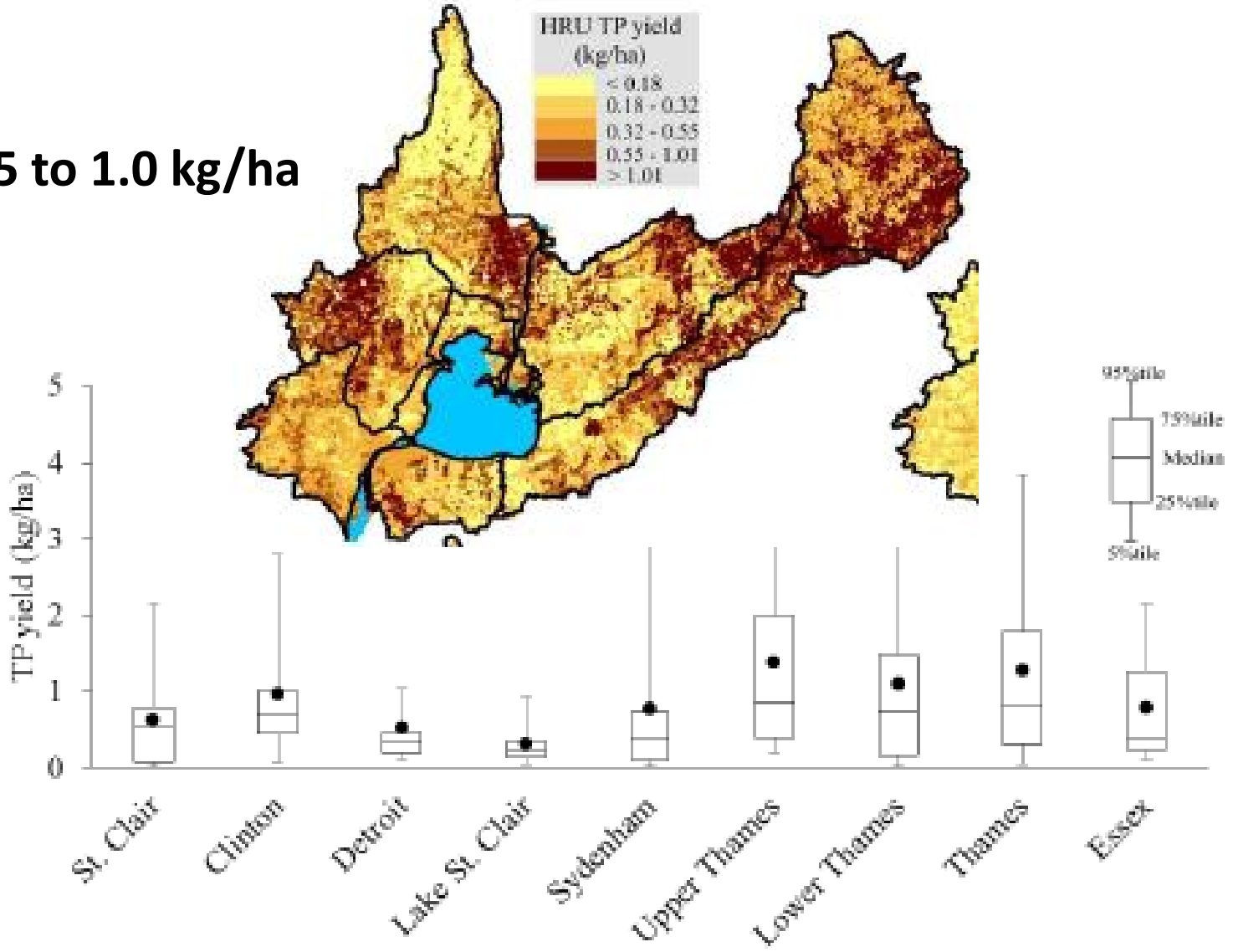
Total phosphorus loads (metric tons per water year) to the **central basin of Lake Erie** by source type (2008–2018).

Red line indicates central basin total phosphorus load **target of 6,000 metric tons**

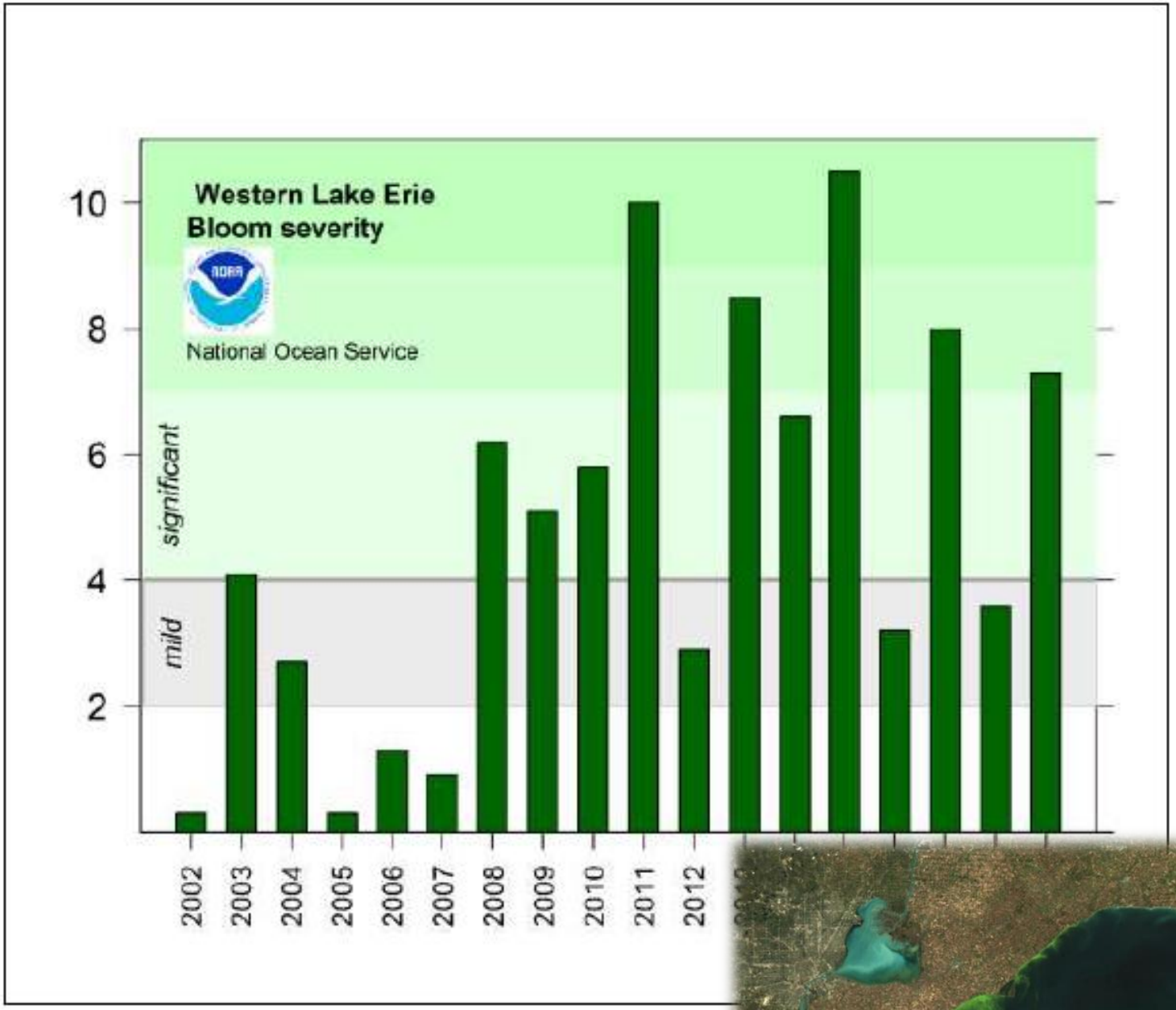
Target Reduction = 213 mT/year

Modelled NPS Agricultural TP Loads

Mean: 0.5 to 1.0 kg/ha



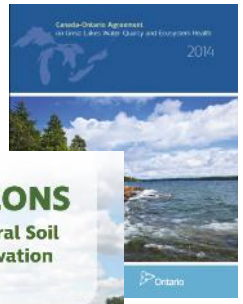
Source: Don Scavia
University of Michigan

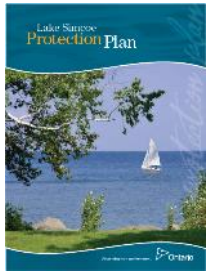

Western Lake Erie
Bloom severity
National Ocean Service
significant
mild
10
8
6
4
2
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

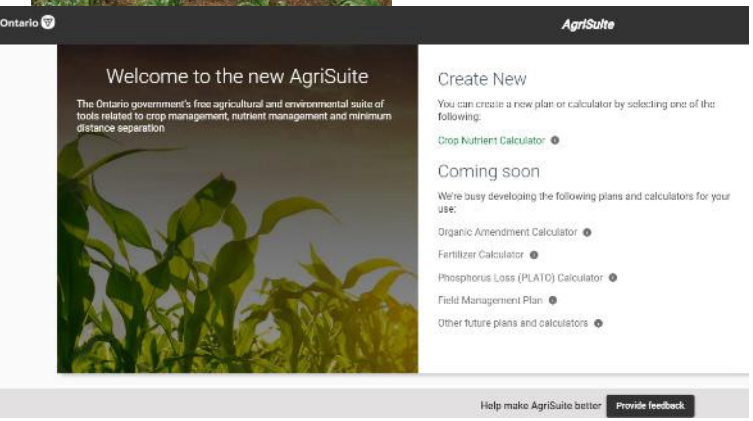
Stewardship Programming

CANADIAN AGRICULTURAL PARTNERSHIP
Innovate. Grow. Prosper.

Lake Erie Agriculture Demonstrating Sustainability (LEADS)







Current OMAFRA programming delivering on Great Lakes sustainability includes:

- Canadian Agricultural Partnership (Partnership) programming for Environmental Stewardship
- Lake Erie Agriculture Demonstrating Sustainability (LEADS), Canada-Ontario (under the Partnership)
- Agreement for Great Lakes Water Quality & Ecosystem Health (COA)
- Lake Simcoe Protection Plan

Multiple tools that complement each other are used across programs to bring about voluntary change:

Cost-Share Funding	• Provide financial Support for most Impactful BMPs
Build Awareness & Knowledge Transfer	• Inform of environmental challenges and share information on possible solutions
Develop Risk Assessment Tools	• Support targeted and informed decision-making

Soil Best Management Practices

P loading occurs in the non-growing period, particularly in large storm events

http://www.omafra.gov.on.ca/english/environment/bmp/soil-health.htm

Stewardship Programs beyond government:

Canada-Ontario Lake Erie Action Plan - Ontario Cover Crop Action Plan

Healthy Soil Lowers Erosion and Keeps Lake Erie Clean

2019 and Beyond

The mainstream adoption of cover crops on farms in Ontario and farmer-knowledge of the value of planting cover crops has increased since the establishment of the Ontario Cover Crop Strategy. This document provides the details of the Cover Crop Action Plan to facilitate the adoption of cover crops on Ontario farms.

Facilitating the adoption of cover crops on farms in Ontario is an important part of the Canada-Ontario Lake Erie Action Plan; Partnering on Achieving Phosphorus Loading Reductions to Lake Erie from Canadian Sources. Cover crops can play an important role in stabilizing soil during the non-growing season and help to reduce the risk of erosion and nutrient loss.

In 2016, when farmers were looking for ways to address the issue of phosphorus in Lake Erie, a collaboration of farm stakeholders, under the name the Ontario Cover Crop Steering Committee, came together to figure out a strategy to facilitate the adoption of cover crops on farms in Ontario. The strategy was called the Ontario Cover Crops Strategy and focused on four key areas: Research, Policy and Programs, Communication, and Champions.

This document outlines the work that has been completed to encourage and facilitate the adoption of cover crops on farms in Ontario. Cover crops have been a tool that farmers have used for more than a hundred years. Recently, there has been a resurgence of interest in the value of cover crops by early-adopters. The Cover Crop Action Plan has been built upon the momentum that was occurring in the countryside for planting cover crops. The Cover Crop Steering Committee has worked collaboratively to create action in the following areas outlined in the Ontario Cover Crop Strategy and put in place permanent processes for continuing the momentum. Protecting the environment is an important part of Grain Farmers of Ontario's strategic plan. Leading the implementation of the Cover Crop Strategy was an important initiative to address the issue of phosphorus in Lake Erie in addition to the commitment to implement the 4R Nutrient Management program.

Ontario Cover Crop Steering Committee Members

Certified Crop Advisor Association (CCA), Conservation Ontario, Grain Farmers of Ontario, Innovative Farmers Association of Ontario (IFAO), Ontario Agri-Business Association (OABA), Ontario Federation of Agriculture (OFA), Ontario Fruit and Vegetable Growers Association (OFVGA), Ontario Soil and Crop Improvement Association (OSCIA), Upper Thames River Conservation Authority

Committee Resource; Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

An Action Plan with momentum

The Cover Crops Action Plan has built within it evergreen activities that will renew interest in cover crops within its Steering Committee membership. The Cover Crops Steering Committee will meet periodically to check in on the progress of these activities within the Action Plan until cover crops become the mainstay.

ONTARIO COVER CROPS STRATEGY

Covered Land Clean Water

https://www.gfo.ca/wp-content/uploads/2019/03/OntarioCoverCropStrategyActionPlan.pdf

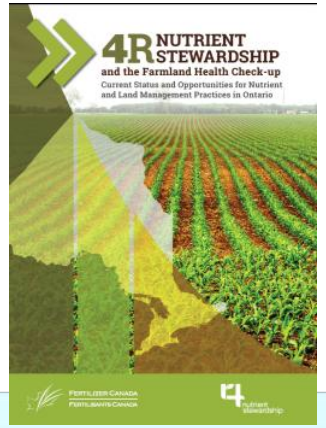
https://www.farmfoodcareon.org/timing-matters/

CURRENTS OF change
inspiring • creating • transforming

4R Ontario: Celebrating Successful Public-Private Partnership Models

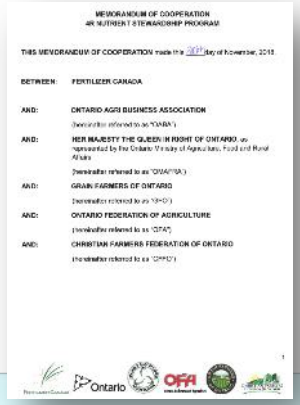
2015 MOC

Canadian Fertilizer Institute (CFI) Ontario Agribusiness Association of Ontario (OABA) and OMAFRA



2017

Workplan Completed on joint funding model: workshops, training, 4R acres pilot, fertilizer & manure use surveys.


MEMORANDUM OF COOPERATION
4R NUTRIENT STEWARDSHIP PROGRAM

THIS MEMORANDUM OF COOPERATION made this 20th day of November, 2018.

BETWEEN: FERTILIZER CANADA

AND: ONTARIO AGRI BUSINESS ASSOCIATION

AND: HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO as represented by the Ontario Ministry of Agriculture, Food and Rural Affairs

AND: GRAIN FARMERS OF ONTARIO

AND: ONTARIO FEDERATION OF AGRICULTURE

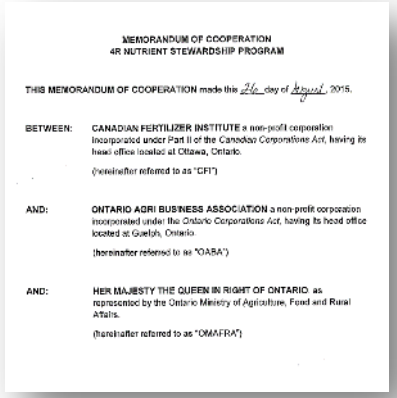
AND: CHRISTIAN FARMERS FEDERATION OF ONTARIO

2019

28 full service ag retail outlets completed pre-audit in Western Ontario

5 sites went on to become fully certified.

Horticulture working group commencing.


MEMORANDUM OF COOPERATION
4R NUTRIENT STEWARDSHIP PROGRAM

THIS MEMORANDUM OF COOPERATION made this 21st day of August, 2015.

BETWEEN: CANADIAN FERTILIZER INSTITUTE a non-profit corporation incorporated under Part II of the *Canadian Corporations Act*, having its head office located at Ottawa, Ontario.
(hereinafter referred to as "CFI")

AND: ONTARIO AGRI BUSINESS ASSOCIATION a non-profit corporation incorporated under the *Ontario Corporations Act*, having its head office located at Guelph, Ontario.
(hereinafter referred to as "OABA")

AND: HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO as represented by the Ontario Ministry of Agriculture, Food and Rural Affairs.
(hereinafter referred to as "OMAFRA")

2016

Fertilizer Canada Pilots:

4R Certification for CCA's

4R & GLASI Farmland Health Check-up

Adapting the Ohio 4R Certification Program


Soil sampling
A FOUNDATION OF THE 4RS
GRAIN FARMERS OF ONTARIO

2018 MOC

Finalize standards and audit forms.

Hired 4R Ontario Coaches to deliver FREE workshops.

New MOC signed with expanded membership

Multiple pre-audits in progress.

Marketing and communications adapted.


Made possible through funding by:
Ontario

AGRIS CO-OPERATIVE

AGRIS Co-operative earns 4R Nutrient Stewardship Certification in Ontario and Canada

CHRISTIAN FARMERS FEDERATION OF ONTARIO

Ontario

nutrient stewardship

4R Nutrient Stewardship can **help** grow crops sustainably

The 4Rs work to increase production/profitability for farmers while ensuring the future of the agricultural industry

RIGHT

SOURCE

RIGHT

RATE

RIGHT

TIME

RIGHT

PLACE

NUTRIENT STEWARDSHIP CERTIFICATION

Sustainability Goals

Economic

- Improve farm profitability by improving return on fertilizer dollars
- Make the most of dollars spent on fertilizer
- Contribute to improve regional economic development

Social

- Improve access to sources of information to assist in farm management decision making
- Improve productivity of farm labour by appropriate use of emerging technology that increase efficiencies of field operations and reduce costs per unit of crop harvested

Environmental

- Prevent nutrient loss from cropping system
- Improve recycling of crop nutrient from crop residues and livestock manures

NUTRIENT STEWARDSHIP CERTIFICATION

The 4R Ontario MOC Steering Committee

Goals of the 4R Certification Program in Ontario

- Optimize crop uptake of nutrients and minimize nutrient losses
- Create long-term positive impacts on water bodies associated with agricultural production areas
- Encourage sharing of the most up-to-date information
- Help the agricultural sector adapt to new research and technology

NUTRIENT STEWARDSHIP CERTIFICATION

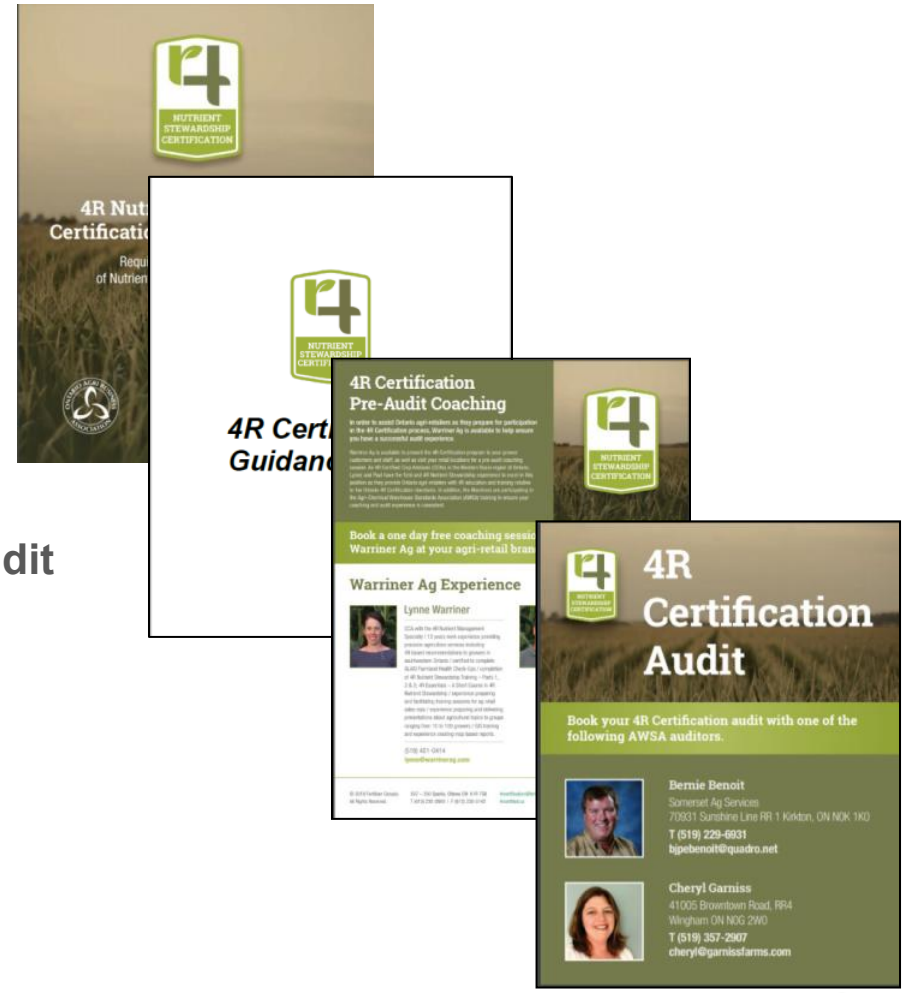
How?

- The 4R Certification Program is a **voluntary** program for Nutrient Service Providers in Ontario
- 4R Nutrient Stewardship is translated into a set of **37 auditable standards**
- Nutrient Service Providers are **only** audited on what they can control
- The 4R Certification Standards will be audited by a third-party audit body, on a **two-year cycle**, to maintain certification

NUTRIENT STEWARDSHIP CERTIFICATION

Ontario 4R Certification Process and Resources

- Step 1: Learn more about 4R Certification
- Step 2: Guidance Book
- Step 3: Book Your 4R Certification Pre-Audit
- Step 4: Book Your 4R Certification Audit
- Step 5: Get the word out!



available at: 4rcertified.ca

Progress of 4R Certification in Ontario

NUTRIENT STEWARDSHIP CERTIFICATION

4R-ON Summary *(as of November 11, 2019)*

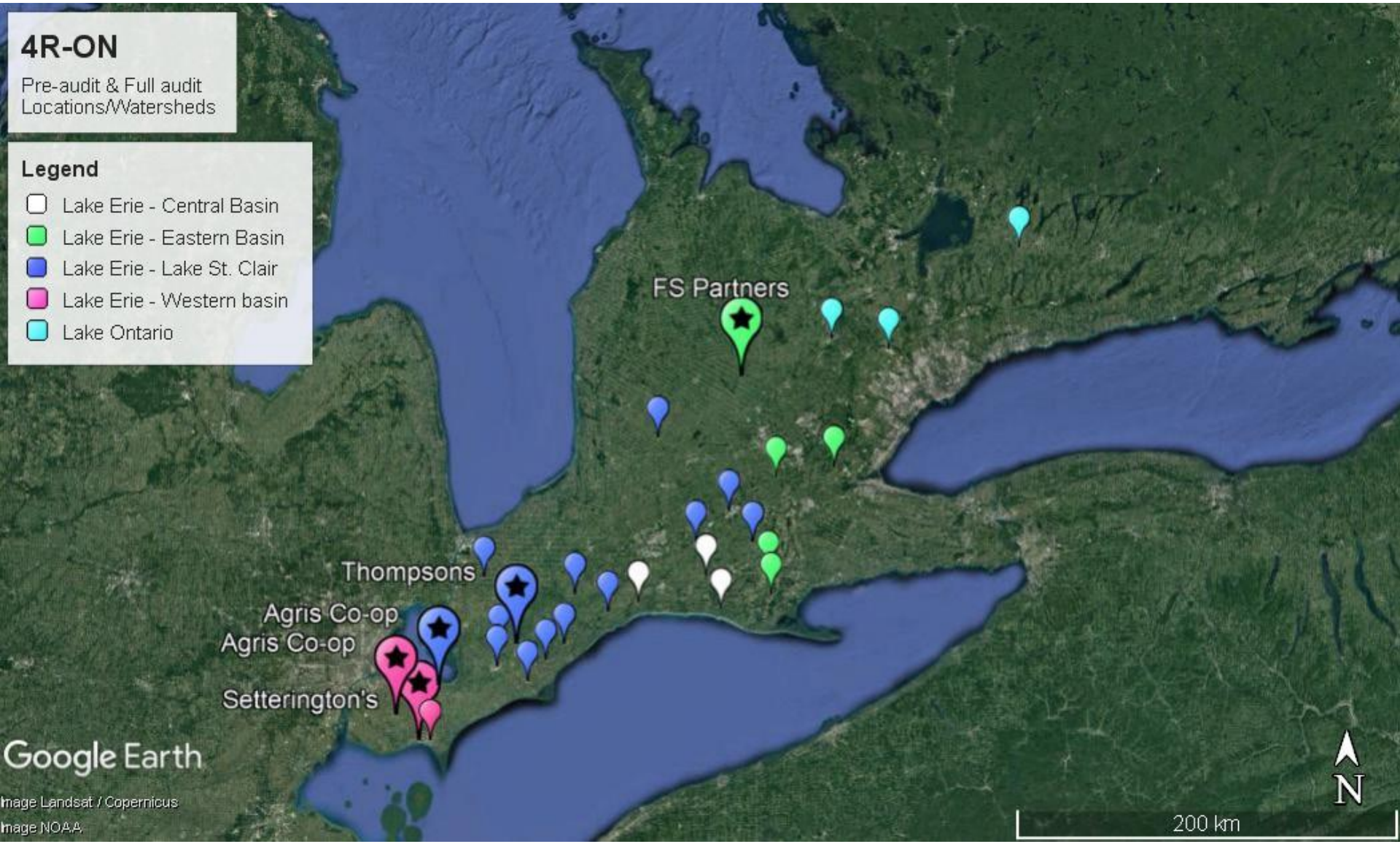
4R Pre-audited Site Statistics:

- **28** full service ag-retail locations completed a pre-audit in Western Ontario in 2018-2019
  - **5** sites went on to complete full 4R certification in S. Ontario in same year
- **25** of **28** locations located within Lake Erie watershed.

Impact Analysis:
• 146 ag-retail locations identified in Western Ontario as potential 4R certified sites
• 19% of ag-retail locations in Western Ontario completed a 4R pre-audit
• 41% of ag-retail locations in Lake Erie watershed completed a 4R pre-audit
• 17% of pre-audited sites completed full certification in inaugural year *

* 4R ON process is a pre-audit followed by a full audit to become certified.

NUTRIENT STEWARDSHIP CERTIFICATION


4R-ON
Pre-audit & Full audit
Locations/Watersheds
Legend
Lake Erie - Central Basin
Lake Erie - Eastern Basin
Lake Erie - Lake St. Clair
Lake Erie - Western basin
Lake Ontario
FS Partners
Thompsons
Agris Co-op
Agris Co-op
Setterington's
Google Earth
Image Landsat / Copernicus
Image NOAA
N
200 km

4R-ON Summary *(as of November 11, 2019)*

4R Certified- Site Statistics:

Aggregated Data:

- Total growers impacted: **1,006**
- Acres impacted: **179,846**

Impact Analysis:
• 3.9 M potential acres in Lake Erie watershed (ON portion)**
• 5% of acres impacted by 4R-ON program in inaugural cycle
• ~17,000 farmers in Lake Erie watershed (ON portion)***
• 6% of total farmers in region impacted by 4R program in inaugural year

* See 4R-ON Nutrient Stewardship Certification Manual for definitions

** Canada-Ontario Agreement on Great Lakes Water Quality & Ecosystem Health (2014)

*** 2016 Stats Canada Census

NUTRIENT STEWARDSHIP CERTIFICATION

4R-ON Summary *(as of November 11, 2019)*

4R Certified Staff & Training

- **97** employees have received 4R training
  - **15** CCA's employees at 4R certified ag-retail locations
    - 2 CCA-4R specialty certified
  - **29** non-CCA crop recommendation staff
  - **14** full-time application staff
  - **39** seasonal staff
- **Average** of 19 staff per site (incl. seasonal staff)
  - **3** Certified Crop Advisors (CCA)
  - **6** Crop input recommendation staff (non-CCA's)
  - **3** Application staff

NUTRIENT STEWARDSHIP CERTIFICATION

What is an Ag Retail Outlet?

Usually a full service farm supply company , Cooperatively or privately owned

- Seed
- Nutrients
- Plant Health
- Grain
- Fuel
- Finance
- Local Agronomy expertise
- Timely customer contact leverage program delivery

What is in it to be a 4 R Certified Ag Retailer

4R Nutrient Stewardship is quickly gaining recognition with decision makers, agriculture groups, and growers as the gold-standard for on-farm nutrient management for stewardship in the Great Lakes basin

The framework has been identified by the International Joint Commission as an indicator of water quality, encouraging farmers to adopt 4R practices to reduce nutrient losses.

Getting Agri-retailers 4R Certified is the first step in expanding the reach of 4R Nutrient Stewardship to Ontario growers

A framework for excellence

Training
Application
Recommendation
Documentation

NUTRIENT STEWARDSHIP CERTIFICATION

Training Requirement

T1- Nutrient Service Providers, sales, and application staff have undergone an initial training and staff are able to demonstrate knowledge about 4R Nutrient Stewardship and the 4R Certification Program.

Evidence

Meeting agendas, education log, or materials indicating 4R concepts and topics (Right Rate, Time, Place and Source) were covered, roster of those in attendance. Can be an interview with various staff. Educational information and sample presentations available at eLearning.fertilizercanada.ca & 4r.fertilizercanada.ca

Requirement
T 5 - Nutrient Service Provider has conveyed informational materials on 4R Nutrient Stewardship to all grower customers.

Evidence

Signature by grower, OR proof of attendance at a company sponsored 4R Nutrient Stewardship educational event, OR proof of distribution of materials via mailing list.

Application

Requirement
A2 - Phosphorus injection, subsurface banding, or broadcasting with immediate incorporation are the recommended placement methods unless the risk of phosphorus loss to surface water has been demonstrated to be low according to a provincially approved phosphorus index risk assessment procedure.

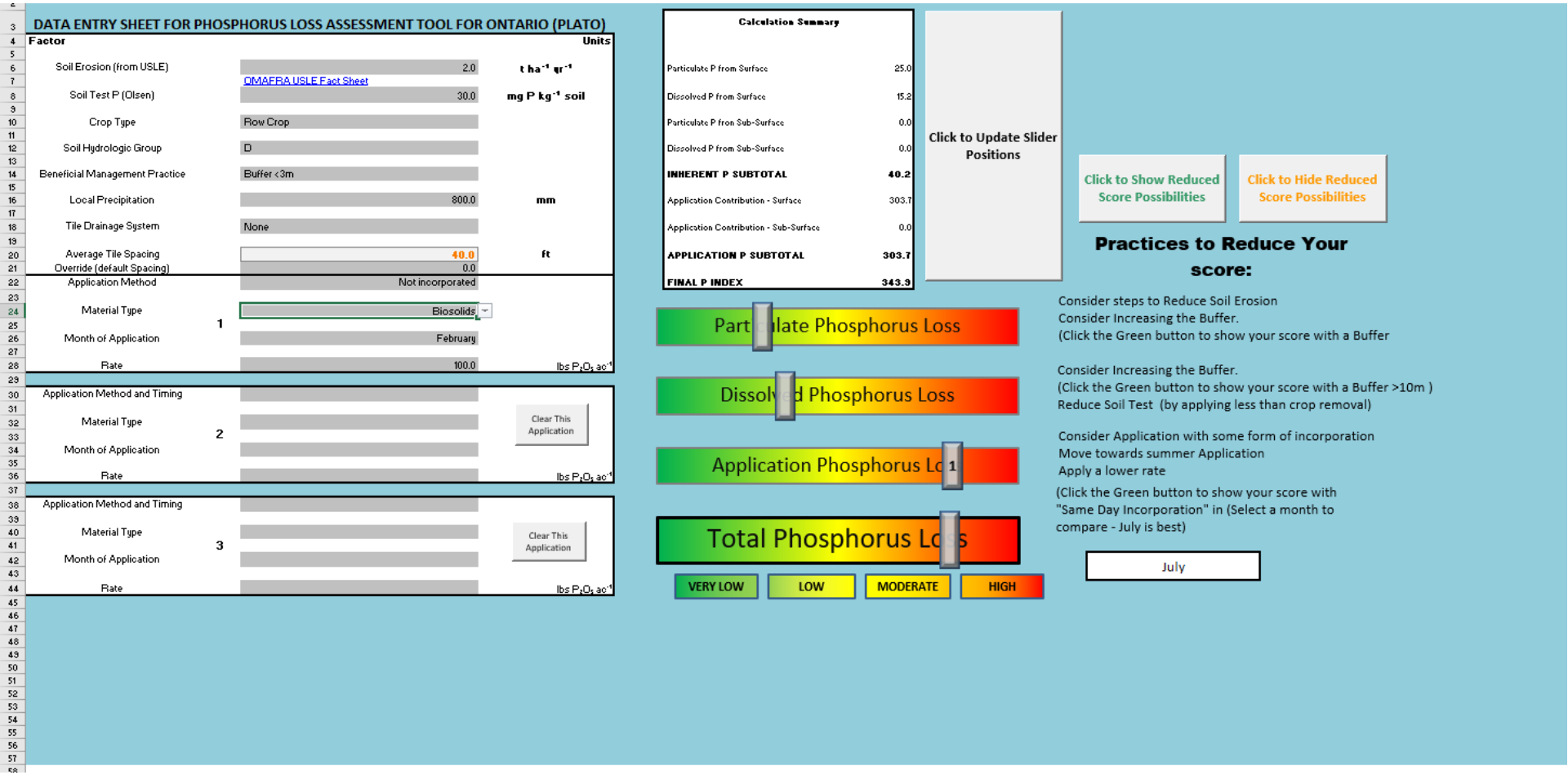
Evidence

Recommendation records indicate the recommended placement(s). Statement on phosphorus placement given/mailed to grower customers or grower customer signature indicating understanding.

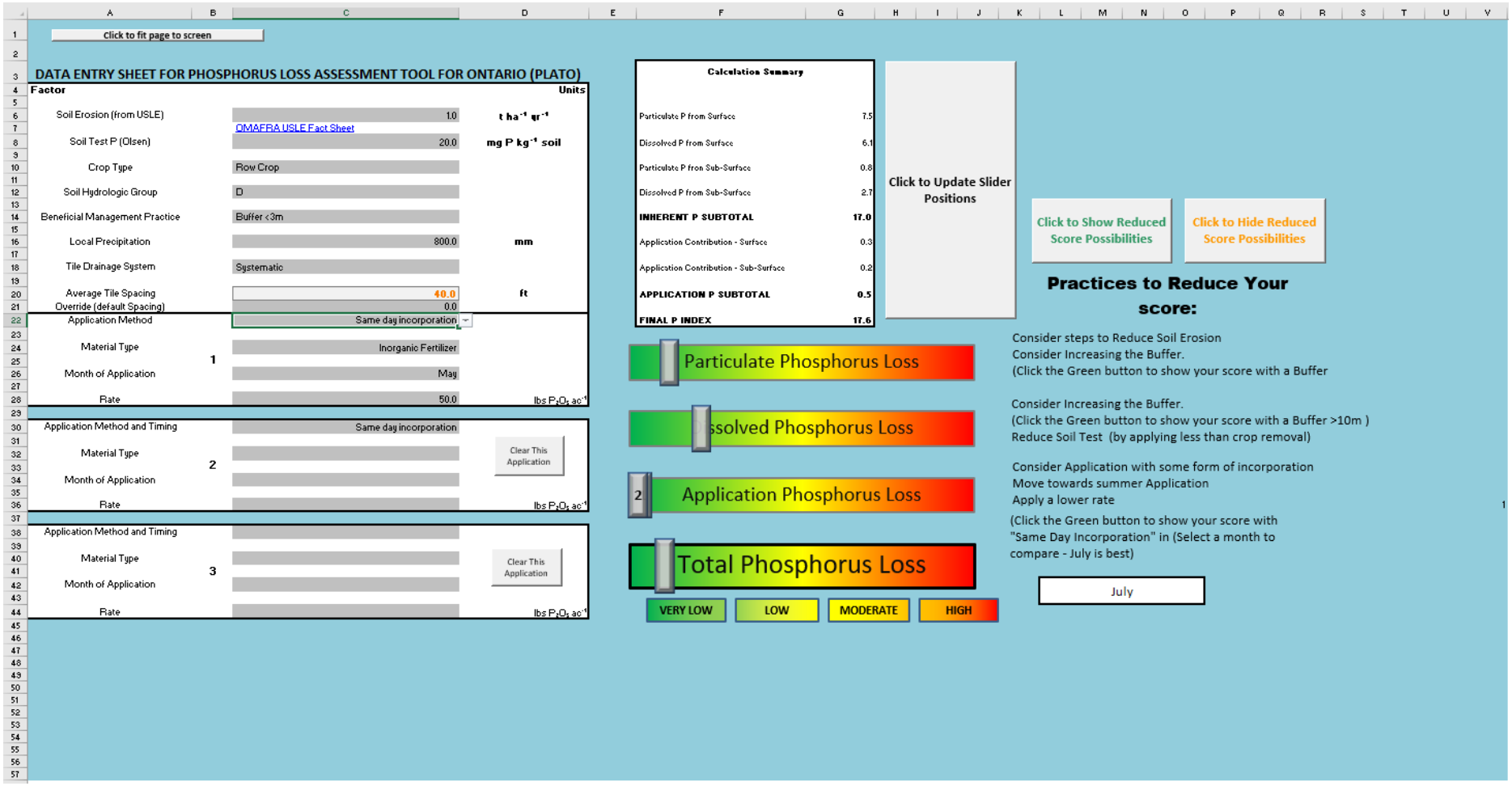
Requirement
A3 - No winter/frozen ground application.

Evidence
Recommendation records indicate the preferred timing. Application records indicate there is no frozen ground or snow present. Frozen ground is defined: when soil conditions are such that tillage or nutrient incorporation and/or injection after application are not possible at the time of nutrient application, and will not be possible within the next 48 hours as a result of frozen conditions. Snow-covered ground is defined: when soil cannot be seen because of snow cover.

Phosphorus Loss Assessment Tool Ontario - PLATO



Phosphorus Loss Assessment Tool Ontario - PLATO



NEW

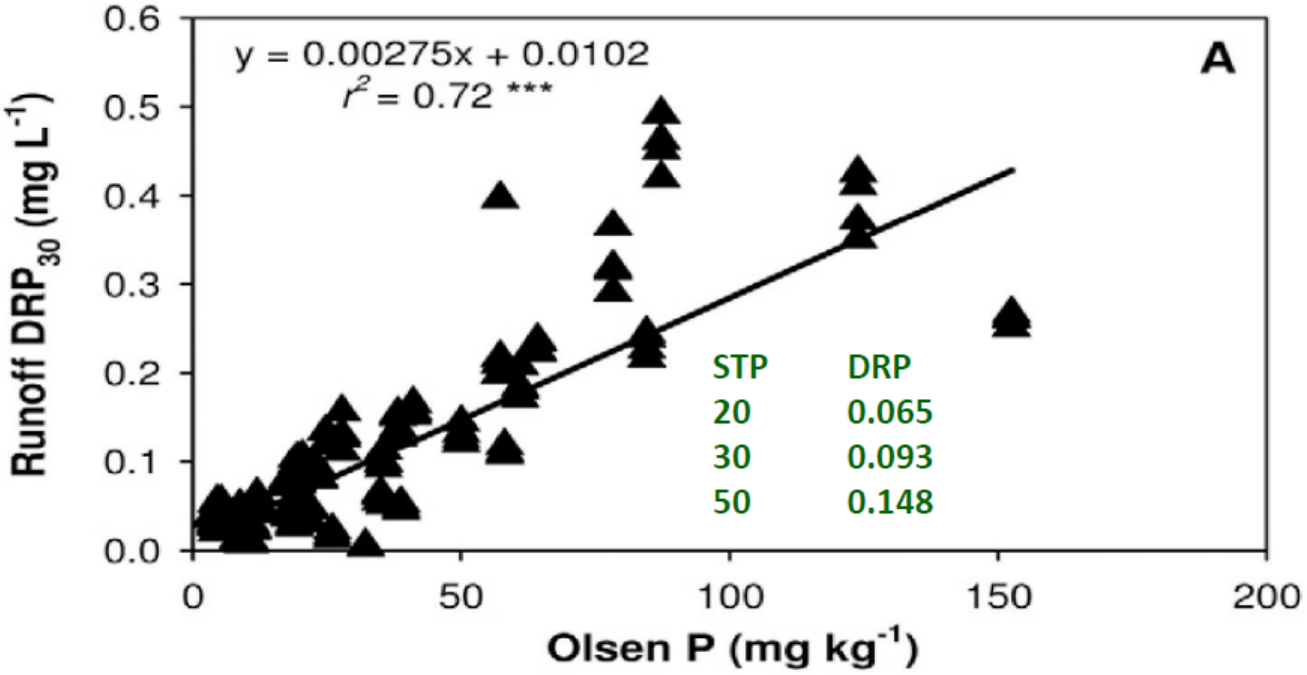
PLATO - Phosphorus Loss Assessment Tool Ontario

Scenario Testing – Scoring

- 4 Categories based on the percentile of 16128 individual scenarios

Category	Range	Score
Very Low	< 50th Percentile	<30
Low	50th to 75th Percentile	30-60
Medium	75th to 90th Percentile	61-140
High	>90th Percentile	>140

Soil test P and runoff P in Ontario



Six soil series, ten sites each, ranging in soil test P.
Standardized runoff boxes, rainfall applied at 3" per hour for 30 minutes runoff.

Wang et al., 2010. J. Environ. Qual. 39:1771–1781

Application Requirement

A 7 -Broadcast applications of crop nutrients without immediate incorporation are neither made nor recommended unless a documented local weather forecast (verifiable private or government generated) indicates less than a 50% chance of a rainfall event involving more than 25mm (one inch) of rain beginning in the next 12 hours.

Evidence

The current weather forecast for the nearest town available to the fields is printed as a record within 12 hours of application. If the chance of precipitation exceeds 50%, the forecast total amount must be less than 25 mm (one inch).

A 10
No application of fall nitrogen other than co-applied with P sources or to meet fall crop N requirements.

Recommendations

Requirement

R 2 - Soil tests are conducted at least once every 4 years.

Evidence

Review of records on file, can be hard copy or electronic. No soil test result may be older than 4 years old.

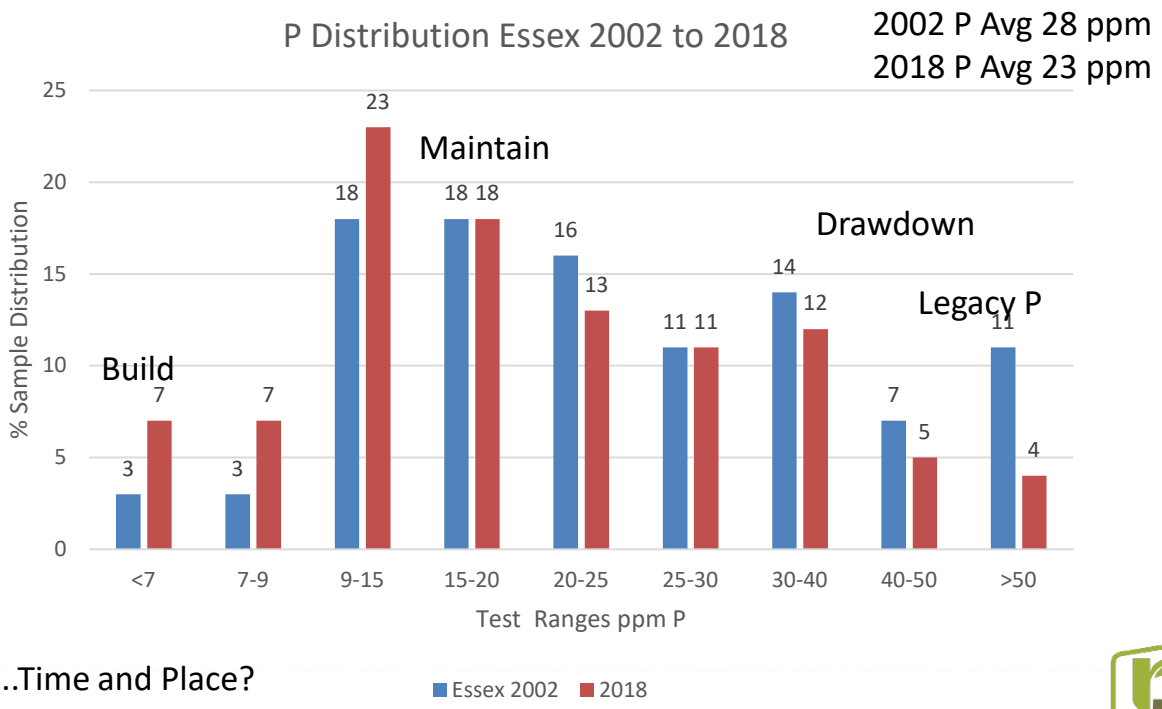
Requirement

R7 For all nutrient recommendations and/or application, the inclusion of a minimum setback distance (e.g., 35-100 ft.) near known sensitive areas, such as tile inlets, well heads, gullies, and water bodies is documented and discussed with the grower customer.

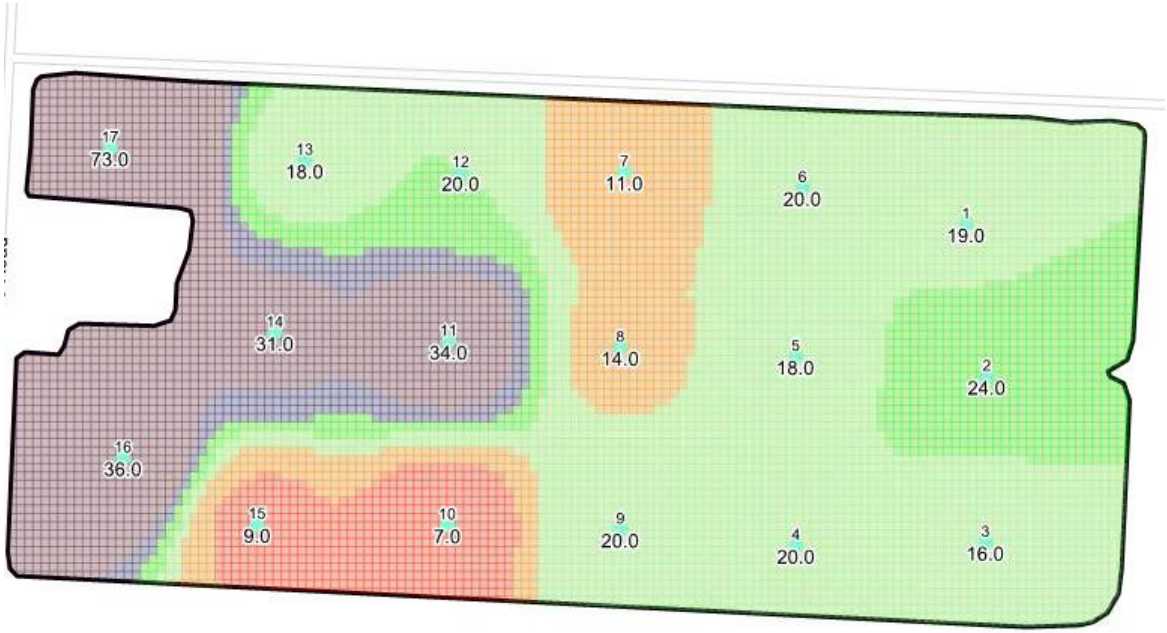
Evidence

Setbacks discussed in meetings with grower customer, in subsequent years signatures of grower customers will be on file, or included on customer's application/recommendation cover sheet or maps.

Phosphorus Distribution in Essex County



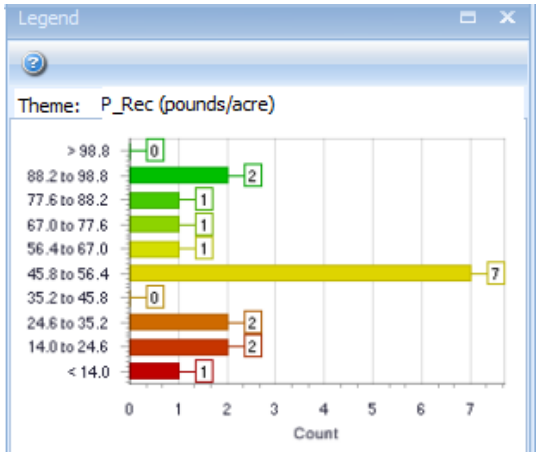
Rate? …..Time and Place?

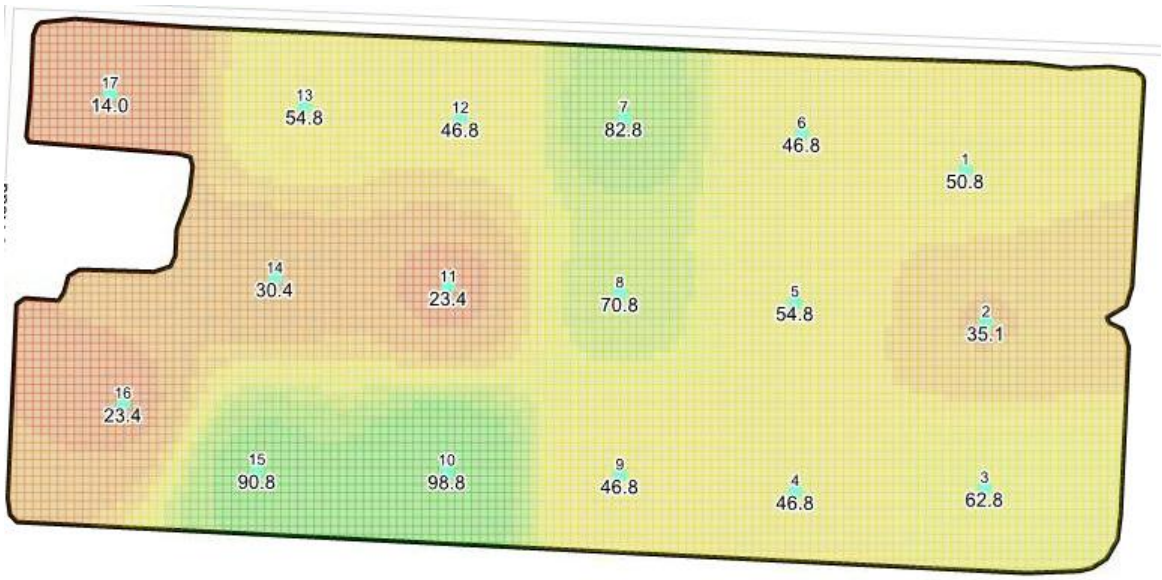


Average P soil test is 22.9 ppm range is 7 to 73 ppm

21 of 46 acres are in the 15 to 20 ppm range

9 acres over 30 ppm





Variable rate application strategy for Soybeans to be spring applied

Slightly above OMAFRA agronomic balance

But negative to neutral on crop removal balance with 4 acres building P test

Documentation

Requirement
D3- Records related to grower customers are kept confidential by the Nutrient Service Provider and are made available for review during an audit.

Evidence

Confidentiality statement with NSP and auditor signatures. Records are kept confidential by NSP as demonstrated with computer codes, file cabinets, or "safe" rooms or confidentiality agreement with the grower customer.

Requirement

D 5 - Records of individual fields that are accessible to the retailer and made available to the grower/customer include, at minimum:
field boundary, soil type, current soil test results, nutrient recommendations§ crop yield goals used for making recommendations, and rates applied to each field

Evidence
Review of records on file, can be hard copy or electronic.

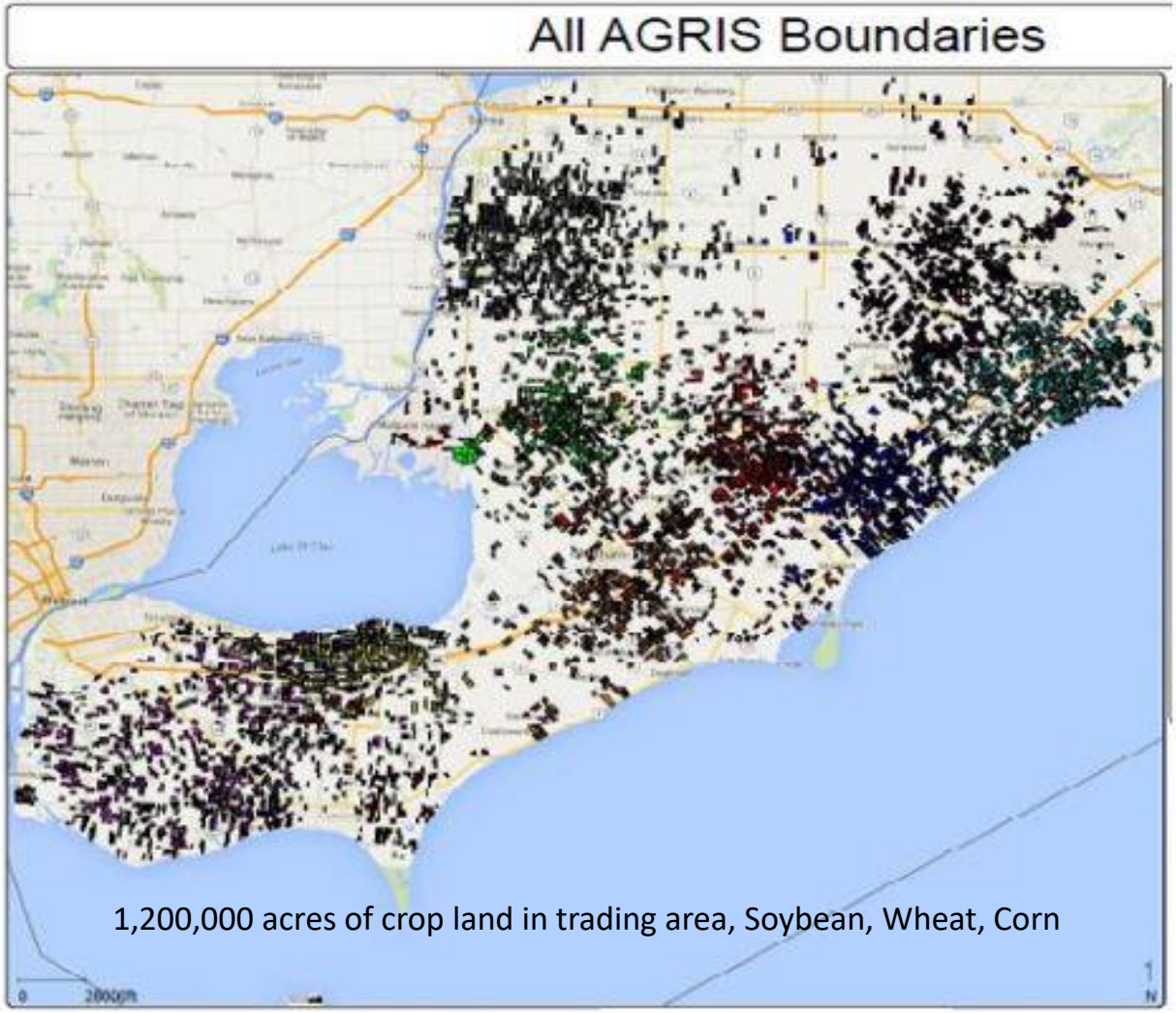
Over 800,000 acres Mapped since 1994

This represents the extent of the trading area

Each dark area is an unique farm field

Contained in the boundaries are various layers of information

- Soil tests
- Application maps
- As applied maps
- Yield maps
- Drone NDVI – on some
- Satellite imagery



The **RIGHT TIME** for NUTRIENT STEWARDSHIP is **RIGHT NOW.**

Q&A

NUTRIENT STEWARDSHIP CERTIFICATION