

# From Policy to Implementation: Expanding the Agricultural Phosphorus Management Toolkit

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## Introduction

- Phosphorus plays a critical role in the increasingly prevalent and severe algal blooms in Lake Erie.<sup>1,2</sup>
- While there are many non-point sources contributing to this complex challenge, this research focuses on phosphorus loss from agricultural sources, particularly cash crop and horticultural farming.

## Research Goal

To inform and enhance the development of alternative policy options, programs, and regulatory tools which help to reduce phosphorus loading into Lake Erie from agricultural sources and which account for place-based implementation considerations.

## What is a Policy Delphi?

- Series of survey iterations with controlled feedback<sup>3</sup>:** After each round, expert responses are synthesized before they are returned back to the experts to review and to provide feedback on.
- Anonymity amongst experts<sup>3</sup>:** Allows for the exchange and refinement of ideas without fear of judgement.

## Acknowledgements

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- Thank you to my supervisor, Dr. Sheri Longboat, and to my committee members (Dr. Hugh Simpson and Dr. John FitzGibbon) for their guidance and support.
- Thank you to the participants for the generosity of their time and knowledge.

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## Methods

### Policy Delphi

Conduct a Policy Delphi with experts to identify priority phosphorus management options moving forward.

### Literature Review

Conduct a literature review to supplement the Policy Delphi and to identify approaches in other jurisdictions.

### Priority Options

Based on Policy Delphi and literature review, identify priority phosphorus management options.

### Farmer Interviews

Conduct one-on-one semi-structured interviews with farmers and key stakeholders to determine place-based implementation considerations.

- Open ended questions** to collect potential phosphorus management approaches across five categories: financial, regulatory, land use policy, agri-environmental programs, and other.
- Analysis:** Inductive open coding

Round **1**

- Quantitative:** Rate statements generated in first round based on:  
**Support**  
**Feasibility**
- Qualitative:** Provide written justification for subset of priority statements

Round **2**

- Opportunity to **adjust ratings and provide feedback** on other experts' comments for priority statements and statements demonstrating high polarity in second round.

Round **3**

## Policy Delphi: Round One Results

This list is not exhaustive. Numbers in brackets refer to the amount of statements related to that topic.

### Regulatory:

- Nutrient Management Act:** Increase enforcement, expand scope to non-livestock farms (4), prohibit application during winter, on frozen/snow-covered/saturated grounds, and prior to significant precipitation
- Other:** Regulate fertilizer application (4), farmer liability, cross-compliance schemes, permit by rule (2)

### Financial:

Loans, pay for performance, certification, P offsetting, fines for P losses above threshold, point of sale subsidies, profitability mapping, crop budgets with P constraints, cap and trade, insurance schemes (3), Payment for Ecosystem Services/ALUS (2), taxes (5)

### Land Use Policies and Buffers:

Mandatory buffers (2), P subwatershed plans, increase protection of buffers and wetlands (3), use Drainage Act to implement green infrastructure, policies for highly erodible land and minimum percentages of natural cover in priority areas, no livestock operations in floodplains

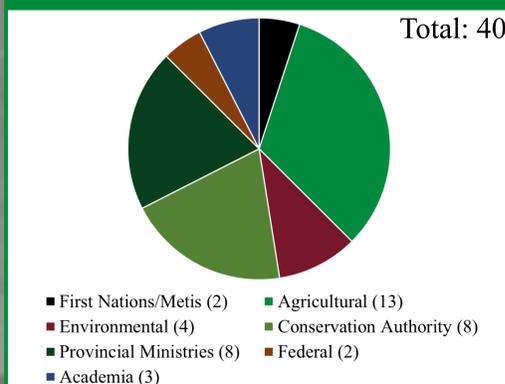
### Agri-Environmental Programs: Focuses & Audiences

Cover Crops  
Peer-to-Peer  
Early Adopters  
Renters  
Extreme Weather Events  
Climate Change  
Environmental Farm Plan  
Drainage  
Agri-Industry  
Carbon Offsetting  
Green Infrastructure  
Equipment Loans  
Demonstrations  
Innovators

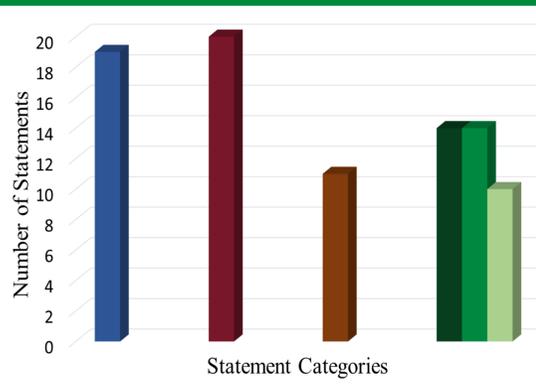
## Anticipated Outcomes

- Consideration of alternative phosphorus management approaches
- Improved understanding of farmer perceptions of these approaches, including implementation and feasibility considerations and necessary supports for compliance
- Inform future policy and program development

## Round One: Participant Representation



## Distribution of Statements in Round One Categories



88 unique statements generated in first round. These will be rated and commented on in subsequent rounds.

### Legend

- Regulatory Approaches (19)
- Financial Tools (20)
- Land Use Policies and Buffers (11)
- Programs: Focuses/Audiences (14)
- Programs: Funding/Admin (14)
- Programs: Outreach/Extension (10)