

## Northeast Zone

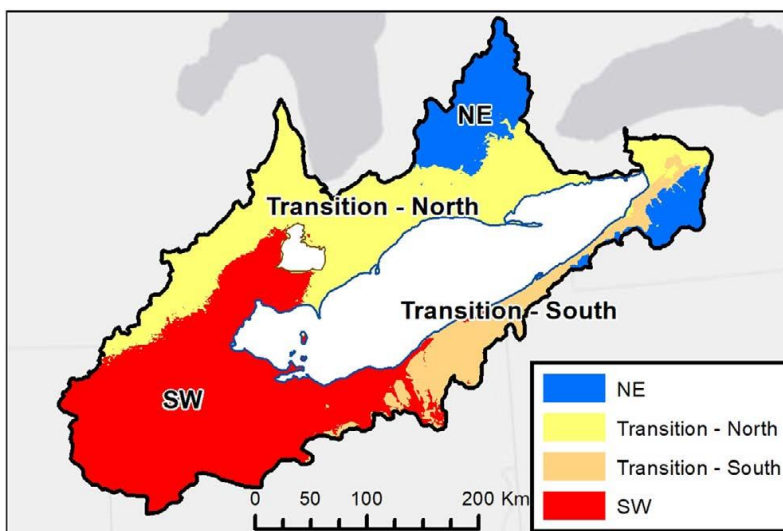
# Optimizing Conservation Practices

## Depending on where you farm



## Context

- New Lake Erie-based research finds that we can improve strategic management of phosphorus loss by tailoring conservation practices for different regions.
- Phosphorus loss in any part of the Lake Erie watershed is due to a combination of landscape type (soil texture, slope), climate, and management practices. Because these differ across the watershed, the effectiveness of conservation practices may also differ across regions.
- Researchers recommend region-specific options for farmers to choose from when designing conservation strategies.



### Proposed Phosphorus Management Regions

This map shows the Lake Erie watershed delineated into proposed P management regions. The Upper Thames watershed falls into the Northeast (NE) zone.

Regions are based primarily on differences in soil texture, slope and climate conditions.

# Recommendations for the Upper Thames Watershed

## Address Point Sources



Point sources of nutrient runoff can be significant contributors and should be addressed first. For example, a recent study found that 22% of the annual total P losses from a 3450-acre watershed came from a bunker silo.

## Maintain Agronomic Soil Phosphorus Levels



Higher soil-test P levels can significantly increase the risk of edge of field losses. Aligning soil phosphorus levels with agronomic recommendations is an effective strategy, regardless of farm location or soil type. Regular soil testing is recommended.

## Subsurface Placement



Banding nutrients, or incorporating them after application can significantly reduce risk of P losses to both surface runoff and tile drainage. Be careful not to "undo" the benefit of reduced soil erosion by increasing tillage significantly, especially prior to the nongrowing season.

## Control Soil Erosion



In the NE region (including the Upper Thames), tiles are significant P sources because so much water flows through them, but the majority of P still comes from surface losses through erosion, especially during the nongrowing season. Depending on the field, controlling soil erosion may include reducing tillage, planting cover crops, crop rotations or using erosion control structures.

## Application Timing



Runoff during the nongrowing season is a major contributor to surface P losses. Where possible, limit nutrient applications in late fall. Following application, try to limit movement by incorporating and/or tying nutrients up with a cover crop.

## Other conservation practices to consider:

- Precision nutrient application equipment to avoid waste
- Variable rate applications to match crop needs
- Buffers along watercourses to filter runoff and to stabilize/shade banks
- Limit runoff of other farmyard nutrient sources such as manure, fertilizer, bunker silage leachate. Strategies could include covered storage, runoff recovery, clean water diversion, etc.
- Maintain septic systems
- Maintain and protect woodlots or wetlands that provide watershed benefits.
- Field windbreaks to control wind erosion and increase yields.

These ideas were originally published by Merrin Macrae et al. in the *Journal of Environmental Quality*: One size does not fit all: towards regional conservation practice guidance to reduce phosphorus loss risk in the Lake Erie watershed.

<https://acsess.onlinelibrary.wiley.com/doi/full/10.1002/jeq2.20218>

Research made possible with funding from:

