



**CLIMATE CHANGE:
2021 and Beyond**

Preparing our communities for the future.

Great Lakes and St. Lawrence Cities Initiative Presents:

Climate Change Impact on Ag Water Quality
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Outline

- Climate Change
 - Variable temperature impacts agricultural productivity
 - Threat of frost
 - Extreme heat
 - Severe weather events
 - Major rains
 - Drought
- 2021 Growing Season
 - Early frost during growing season
 - Early season drought
 - Mid season heavy rains





Down-road Impacts on the Environment

Major Rains

- Manage more water through drainage systems leading to increased flows from ag lands
- Can lead to erosion and nutrient leakage during growing season when nutrients have been added to support crop growth
- Timing of nutrient losses varies by soil types
 - Clay soils develop macropores during droughts. Sudden heavy rains transport surface nutrients to field tiles
 - Loam soils initially absorb nutrients when rain events begin, but soon begin to transfer nutrients in saturated soils
- Untimely heavy rains cause soil compaction – farmers need to till
- Heavy rains also increases the need for more drainage structure further increasing flows!



Droughts

Triggers irrigation mostly for fruit and vegetable production

Water quantity taking is controlled, however as climate extremes become more frequent, farmers will be seeking permits for increased use.

This sets up competition for water when watercourse levels are lowest

Long term opportunities for greater water storage. Municipalities can play a key role in incorporating agricultural needs in their long-term land use planning – the value chain from farm to consumer

How Do Farmers Mitigate?

- Add more field tile drainage
- Rely on regenerative agricultural practices
- Perform less tillage
- Plant more ground cover
- Livestock nutrients transformed at source
 - Solid- liquid separation
 - Biogas
 - Nutrient recovery for reuse when the plant needs it



Is the Transition Fast Enough?

- Generational change
- Needs capital
 - Need different tools to grow crops in a regenerative model
- Municipalities can help by recognizing green infrastructure



Green Infrastructure

- Municipalities and governments need to recognize the need for green infrastructure assistance in ag landscapes
 - Maintain and enhance involvement in Municipal drains
 - Recognize farm practices such as reduced tillage, use of cover crops is a municipal asset and needs support to encourage greater adoption
 - Embrace opportunity from agriculture to generate green natural gas (biogas to RNG) for local use by setting up new markets and enabling agricultural participation

Working Together

- Climate impacts need to be mitigated through adoption of new farm practices, better infrastructure for water management and use of technologies to manage our nutrients from cities and livestock operations
- The Thames River PRC group at work bring farmers, drainage sector, municipalities, First Nation, environmental groups together to address water quality issues .
- www.thamesriverprc.com
- Thank you

