Great Lakes and St. Lawrence Cities Initiative Presents:

Climate Change Impact on Ag Water Quality
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• 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