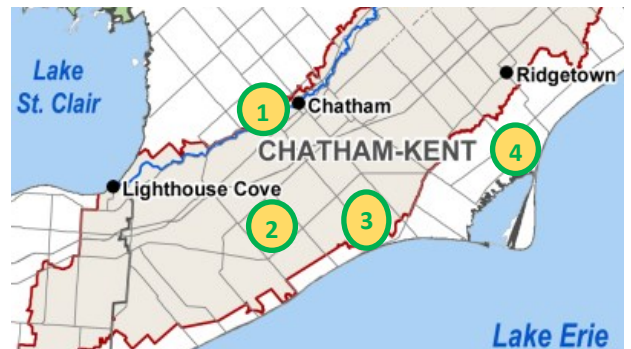


# On-Farm Solutions for Lake Erie

Wednesday, July 6th 2016



## Stop 1—Truly Green Farms, Chatham

**Farmers are adopting water recycling and treatment technology in the greenhouse sector.**

Truly Green Farms gave us a sense of the size and sophistication of Ontario greenhouses. This soon-to-be 90 acre hydroponic tomato greenhouse partnered with GreenField Ethanol to pipe CO<sub>2</sub> and heat, by-products from ethanol production, across the road to the greenhouse to be efficiently used in the greenhouse production cycle. Plants are fertilized through drip irrigation and any excess nutrient solution is captured and stored in a central tank. This solution is then treated to remove pathogens and rebalanced for any nutrient deficiencies. Plants and water are tested regularly for nutrient levels in order to increase efficiency and to ensure water is recirculated within the greenhouse as many times as possible. When needed, water can be discharged to the municipal waste water treatment plant. This is obviously not an option for greenhouses that are further from urban areas and, in these cases, greenhouses have the ability to land apply to field crops or use other means to treat greenhouse wastewater. Improving technology and access to water recycling and treatment options is important for the greenhouse vegetable sector. Extending municipal sewers to greenhouses is also a reliable and low risk option to manage the disposal of both sanitary and process water waste.



## Stop 2—Blake Vince's Farm, Merlin

**Farmers are innovating to build soil health, for sustainability and water quality.**

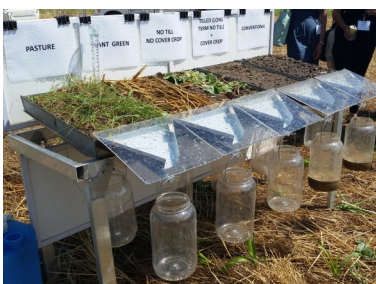


Planting into cover crop 2016

Blake Vince's farm demonstrated both soil health and the risk of innovation. Healthy soil is built over the *long term* through minimizing tillage, keeping soil covered with crop residue and cover crops, and including livestock/manure in the system. Adam Hayes used the rainfall simulator and slake test to compare Blake's field to his conventional neighbour's and the results were stunning. Keeping soil covered and having good soil structure is vital for water quality.

So, the soil looks great but this year, the crop doesn't. Blake planted 18 species after his wheat last July and it overwintered to protect the field from erosion in the spring. He planted untreated corn directly into the crop in late May, and terminated the cover crop with glyphosate just after planting. He has had success a few times with this method, but this year was not the case. The combination of a mild winter, wet May and hot/dry June worked against him. He has already had an Agricorp rep over to discuss crop insurance.

Blake is just one of many farmers that are serious about innovating with cover crops and no till in order to build soil health. They are taking risks with their livelihoods. *Is there an opportunity to modify crop insurance systems to support farmer innovation towards soil health?*



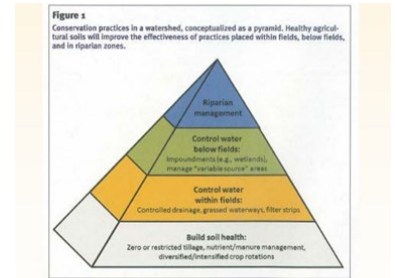
## Farmers are working with Conservation Authorities and researchers to find solutions.

Colin Little (LTVCA) talked about the [Jeanette's Creek priority watershed](#) where he is working with farmers to implement best management practices (BMPs) and monitor their impacts on water quality. Chris Van Esbroeck (OMAFRA) talked about his [Master's research on phosphorus](#) and emphasized that there is no silver bullet solution and the need to have a suite of BMPs that will work in the spring thaw especially. **Avoid, Control, Trap/Treat:** The closer to the problem, the more effective the solution and so we must begin with improving soil health.

### Stop 3 — Lunch, Deer Run Golf Course—networking

#### Technology is transforming agriculture

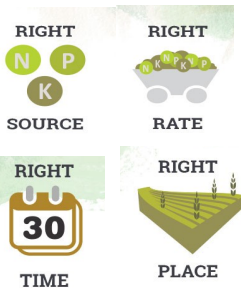
Tyler Whale, President of Ontario Agri-Food Technologies gave us a quick glimpse of the game changing science and technology coming into agriculture. Have a look at [www.oaftgamechangers.ca](http://www.oaftgamechangers.ca) for videos of up and coming innovation in the industry.



Tomer, M., S. Porter, D. James, K. Boomer, J. Kostel and E. McLellan. 2013. Combining precision conservation technologies into a flexible framework to Facilitate agricultural watershed planning. *Journal of Soil and Water Conservation* 65(5): 113A-120A.



#### Farmers, retailers and crop advisors are embracing the 4R Nutrient Stewardship program



A cross section of the industry was represented on a panel to introduce the 4R program, which is based on best practice of applying crop nutrients from the Right Source, at the Right Rate, in the Right Place and at the Right Time in order to minimize fertilizer losses to the lake. The industry has made significant headway in signing a Memorandum of Cooperation, and in designing and promoting a [4R Certification Program](#) with 3<sup>rd</sup> party auditing that starts with the retailers and crop advisors.

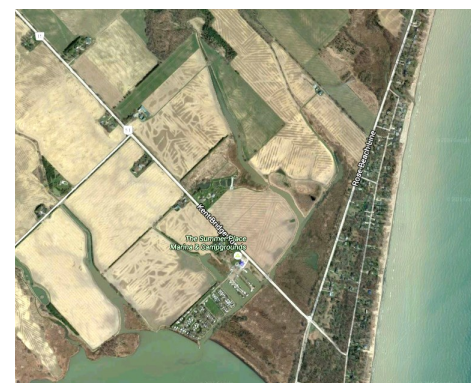
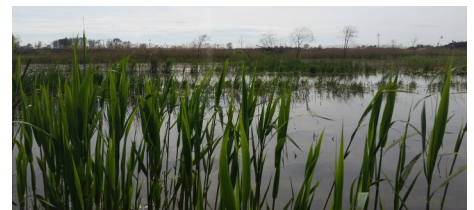


To farmers John Nooyen and Henry Denotter, 4Rs is about being efficient with nutrients while maintaining their livelihoods. Henry brought a Y-drop to demonstrate how he applies fertilizer to the soil right next to the plant at the time when it will use fertilizer the most. But it comes at a cost. The sprayer unit costs \$250,000 and it is a \$35,000 retrofit to add the Y-drops. He demonstrated that it costs a lot for farmers to do the right thing and that these costs aren't factored into market prices. [Click here for Dropbox link to presentations.](#)

### Stop 4—McLean Conservation Lands, Rondeau

#### Wetlands offer opportunities for drainage & water filtration... but land prices are a challenge.

The Rondeau watershed is one of the few remaining coastal wetland systems on Lake Erie. Don Pearson (LTVCA) and Jenn Richards (MNRF) gave us a brief introduction to the area and their wetland restoration work. 98% of the area's wetlands were drained in the last century to create farmland, but as Julie Cayley pointed out, at least they aren't under pavement and there is opportunity to reconstruct them, in the right places. Ian Nichols was one of the first Rondeau farmers to put in a wetland (by cutting field drainage tiles) on the back of his property. We strolled through the wetland complex on the Keith McLean Conservation Lands to the pump house at the back of the property. These fields are systematically tiled and water is pumped to the outlet on the river, where the tile water is currently being monitored with an ISCO automatic water sampler.



Tile drainage is absolutely crucial to agriculture in most areas of Ontario. By improving drainage, the risk of soil erosion is reduced and subsurface drains safely convey water to outlets. There are opportunities to slow water down through controlled drainage systems or through outletting into wetlands for filtration and ground water recharging. But the problem is that farmland prices can be upwards of \$15,000 an acre. *Can we create tax incentives or payments for environmental goods and services to support farmers in retiring more acres to wetlands?*