



Thames River

PHOSPHORUS REDUCTION COLLABORATIVE

Project Progress – May, 2021

Chatham, Ontario (Roesch Farm)

Site:

A 100-acre farm situated east of Chatham. Crops are seed corn, soybeans, specialty beans and winter wheat. There is a pig barn on the farm, and crops receive manure from it annually, using a 4R (right time, right place, right source, right rate) nutrient stewardship plan.

The 100-acre field is tiled, with a 12-inch outlet on each 25 acre lot that empties into the municipal McKinley drain, and then to the Thames. The soil is a very fine clay loam with phosphorus (P) readings of 50 to 65 ppm. It has a very slow infiltration rate (hydrologic soil group D).

The farm will be used to host the testing of several technologies, to be determined later in 2019.

Partners:

Ontario Ministry of Agriculture, Food and Rural Affairs responsible for the model to calculate P recovery and water flow.

[Lower Thames Valley Conservation Authority](#) maintains the 25 acre site, conduct sampling and have the water analyzed.



Thames River PRC providing funding to support sampling.

Research description:

One 25-acre field is being used sequentially on annual cycles to measure P removal using a Filtrex Nutrilock biochar and new sorption material designed at the University of Windsor. Testing began in April 2018. Tile water is channeled through two tanks where P is

absorbed. In the fall of 2018, modifications were made to the tile to channel water to the treatment tanks by Gillier Drainage. A weather station will be added in 2019.

Measurements:

Pounds of P removed will be the metric and calculated using data on total P and dissolved P for the technology's efficiency.

Progress:

At this site, the first half of the 2020-21 year was focused on the evaluation of Biochar as a sorbent material to remove phosphorus from field tile water. The trial was unsuccessful as the material did not respond under the field conditions.

A further consultation with Dr. Chad Penn confirmed that their evaluation under US mid-west conditions proved unsuccessful despite the manufacturers claim based on a batch pyrolysis process. The LTVCA reported on its findings at a [September 2020 PRC webinar](#).

Currently, evaluations are ongoing using a synthetic product CMC-Fe PSM (carboxymethyl-Fe hydrogel beads PSM) produced by a researcher at the University of Windsor. The installation is currently being monitored for tile water quality.