

Indigenous Mycorrhizal Inoculum



Biostimulants are a large part of agricultural inputs and there is a growing number of commercial microbial inoculants. These aim to restore soil health and enhance crop yields after resource intensive crops or soil disturbance. While farmers may be compelled to apply commercial inoculants, whether they are effective is unknown, which perpetuates a sentiment of skepticism toward these products among farmers. Arbuscular mycorrhizal fungi (AMF) are one of the most important plant symbiosis and the number of AMF inoculants available on the market is growing. However, these inoculants typically contain a single AMF strain, which may not necessarily establish. Agricultural systems already contain indigenous AMF that we believe can be used as a natural source of inoculum. As such, our project will determine whether on-farm augmentation of indigenous AMF is a more effective, safe, sustainable, and cost-effective alternative than using commercial inoculants.

The project presents a unique opportunity to address a major problem and knowledge gap. That is, canola, a major cash crop in northern Ontario, is nutrient rich and causes major declines in soil fertility for subsequent crops in the rotation. Canola does not establish associations with AMF, thereby causing a reduction in the abundance of these beneficial soil organisms. Commercial companies produce AMF inoculants. However, their effectiveness and potential consequences to soil health remain unknown. AMF are widespread in soils and we believe that they can be cultivated by farmers for on-farm applications using a novel cost-effective and simple approach.

In year one, we will start by producing indigenous AMF inoculum on-farm through augmentation. This will consist of planting the highly mycorrhizal-associated Sorghum-Sudan Grass as a trap crop. Sorghum-Sudan Grass forms an extensive thin and highly branched root system that can be harvested as a source of inoculum for field application.

In year two, we will test the indigenous AMF inoculum produced on-farm against commercial inoculum compared to non-inoculated sites used in the previous year that were under conventional canola. We will also determine to what extent AMF inoculation can compensate for reduced fertilizer inputs and its impact on soil health.

In the second year of the trial, the design consists of three main reps, including No fertilizer, 50% recommended P and K rate (OMAFRA recommendations), 100% P and K recommendations. As well as three split plots, including control plots (No AMF), commercial AMF product and Indigenous AMF product (AMF grown on site).



The design consists of three main reps, including No fertilizer, 50% recommended P and K rate, 100% P and K recommendations.

As well as three split plots, including control plots (No AMF), commercial AMF product and Indigenous AMF product (AMF grown on site).

For more information about this project, please contact:
Mikala Parr, Research Technician
705-942-7927 x3046
mparr@ssmic.com

Hot Pepper Variety Trial



In 2021, a variety trail was developed to look at five different varieties of hot peppers in two different locations in Algoma. These locations were chosen due to the availability of greenhouse space. The five varieties, with Scoville heat units (SHU) are as follows:

- Devil Serrano- 6,000 SHU
- Fresno 3429- 10,000 SHU
- Primero Red Habanero- 100,000+ SHU
- Helios Habanero- 75,000 -100,000+ SHU
- Kabal Habanero- 300,000 SHU

Site 1, located in Desbarats started all 5 varieties of peppers in early March. They were transplanted into the greenhouse in early May where they stayed until harvest. All varieties had 10+ number of plants in great health. Harvest was taken by RAIN once a week starting on July 27th (lasting for one month) and ending August 30th. Peppers were harvested by the grower and sold to auction before and after these dates. These peppers grew extremely well in the greenhouse with proper staking and care. Yields harvested by RAIN in pounds are as follows:

- Serrano- 6.04 lbs
- Fresno 3429- 2.42 lbs
- Helios- 10.09 lbs
- Kabal- 6.52 lbs
- Primero Red (only one picking)- 0.58 lbs
- It was noted that Kabal Habanero produced much smaller fruit compared to the Helios habanero grown right next to it.

Location 2, located in Bruce Mines started three varieties in early March. They were transplanted to the greenhouse at the end of April where they stayed until harvest. All three varieties had 6+ healthy plants. Harvest taken by RAIN once a week started on July 6th and ended August 24th. Peppers were harvested by the grower and sold to auction before and after these dates. These peppers grew very well in the greenhouse but was noted that they should have been spaced wider but were not due to greenhouse restrictions. Yields harvest by RAIN in pounds are as follows:

- Serrano- 18.04 lbs
- Fresno 3429- 19.21 lbs
- Primero Red- 17.92 lbs

All the peppers harvested by RAIN were processed and used by UpNorth foods to develop a local line of hot sauce. Three different lines of hot sauce were developed thanks to the use of local peppers from this trial and the local auction in Desbarats.

For more information about this project, please contact:
Mikala Parr, Research Technician
705-942-7927 x3046
mparr@ssmic.com

www.rainalgoma.ca



Riparian Restoration of the Thessalon River

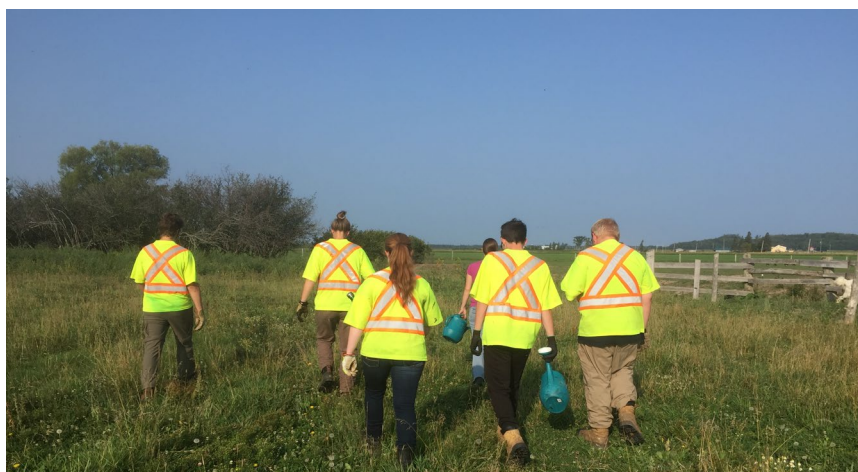


A riparian zone is an area next to rivers, streams, lakes, and wetlands. It is usually made up of water plants and saturated soils, along with ecosystems associated with these areas. Riparian zones serve the very important role of preventing soil erosion, which improves water quality, benefits fish health, and maintains a sustainable shoreline. Without an established Riparian zone consisting of trees and shrubs erosion can occur quickly, wearing away the shoreline, allowing nutrients to be leached from the soil, and allowing cattle to access the river.

In the case of Thessalon in the Municipality of Huron Shores of the Algoma district, the lack of an established Riparian zone combined with the movement of cattle in and out of the river, and significant water quantity through the river has caused significant erosion, decreased water quality and increased sedimentation within the river.

Overall health and preservation of local watersheds and habitat is our main priority on this project. By preventing cattle from entering waterways, and ensuring erosion is slowed down on banks by planting tree, those natural habitats can continue to thrive. By continuing to improve and protect the ecosystem of those waterways, the river and habitats around the river will thrive. Keeping those waterways free from pollution due to animals is a big priority, all while involving the community in engaging activities.

With the help of volunteers and staff members, 375 meters of shoreline is planned to be fenced off, and 400 shrubs will be planted along the shoreline of the Thessalon River. Species that will be planted include: Grey Dogwood, Ninebark and Meadow Sweet Alba Spirea.



Volunteers are welcomed and encouraged to come out and participate. Online workshops will be held for volunteers which cover erosion, riparian zones, proper tree planting techniques, and identification of native species. Our proposed planting date is June 5th, if you are interested in participating please contact Mikala Parr (Research Technician) at (705) 942-7927 x3046 or mparr@ssmic.com or fill out this form to participate

For more information about this project, please contact:

Mikala Parr, Research Technician
705-942-7927 x3046
mparr@ssmic.com

www.rainalgoma.ca