

AgTiv Mycorrhizal Inoculant Trial on Potato and Cereal Crops

Nipissing West/East Sudbury & Sudbury SCIA OSCIA Tier 2 Project – Interim Report

Purpose:

This project is testing the effects of AgTiv Mycorrhizal Inoculant on potato and cereal crops. The inoculant is said to improve plant growth and health, increasing overall yields and quality of the crop. With the added fungi in the soil, the mycorrhizal inoculant also improves soil health and structure. This trial is testing the effectiveness of the inoculant on improving crop production and soil health. If successful in doing so, the inoculant could improve the quality and yields of crops grown in Northern Ontario, therefore benefiting farmers with increased profits from these crops. Long-term benefits would also be provided from improved soil quality, resulting in higher-quality crops in the future.

Background:

Mycorrhizal fungi are naturally found in soils, but farming and soil disturbance leads to a drastic decrease in the fungi population, therefore losing benefits from the symbiotic relationship that the mycorrhizae form with the plant roots. This relationship helps to stimulate plant growth and accelerates root development, producing more vigorous and healthy plants. The fungi has the ability to absorb nutrients and water from the soil that would otherwise be unavailable to the crops, transferring these resources to the plant roots, overall increasing plant access to nutrients and water. This positive interaction can increase plant growth and production. The mycorrhizae also help improve soil structure, increase organic matter, and plays a positive role in soil aggregation.

The mycorrhizal inoculant has been show to have many benefits on plant growth, by stimulating more vigorous growth, producing healthier, disease- resistant plants and increasing yields. With the aid of water absorption, plants are more drought tolerant. The mycorrhizae also helps to optimize fertilizer use by the plants by improving nutrient uptake and can contribute to soil erosion control through improved soil structure.

Many trials done on the use of mycorrhizae inoculants on different crops have shown improvements in plant health and yields. Therefore, there is a strong possibility that this product would be a viable option for Northern Ontario farmers to help them improve their crop production.

Methods:

Four farms in the regions of Sudbury and Nipissing were selected, with two being potato growers and two being cereal growers. Each farm has two 5-acre sites selected: one being high fertility and one being low fertility, based on the farmer’s knowledge of their fields. Each 5-acre plot has side-by-side strips of mycorrhizal inoculant and control. (see Figure 1).

AGTIV POTATO Liquid product will be used on the potato plots, and either AGTIV FIELD CROPS Powder or Liquid will be used for the cereal crops, depending on the farmer’s



Figure 1. Plot set-up.

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equipment set up. The inoculant will either be mixed with the seed at planting or applied in-furrow with a starter or pesticide application.

Soil samples will be taken before the first planting and then taken annually in the fall to observe soil fertility changes. Fields are being mapped out and soil samples tracked using the app “SIRRUS” (see Figure 2). Soil samples are being sent to A & L Labs for the VitTellusSM Soil Health Test (see Figure 3). Lab results are being interpreted and formatted into field maps by Ben Schapelhouman, CCA-ON from TECC Agriculture Ltd (see Figure 4).

Figure 2. SIRRUS app used for plot mapping and soil sample records.

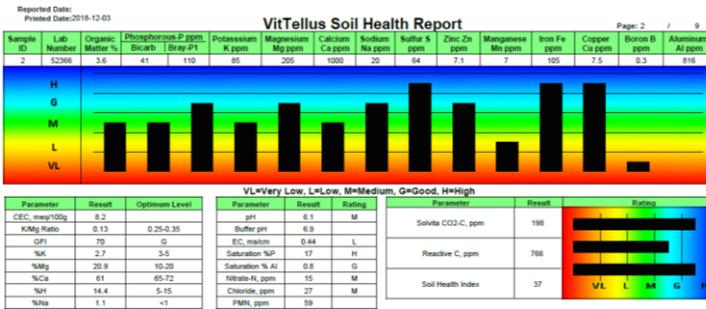


Figure 3. VitTellusSM Soil Health Test

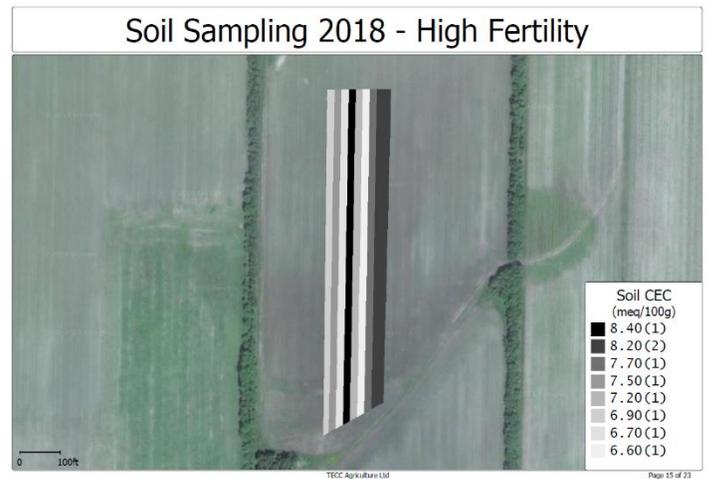


Figure 3. Soil sample map and analysis results combined by Ben Schapelhouman (TECC Agriculture).

Plant tissues samples will be taken at appropriate times during the season to measure plant health. Regular measurements of plant growth and development will be taken throughout the season to compare plant development between the treated plants and the controls. Yield measurements will be taken at harvest and crop quality testing will be done to measure the overall impact of the mycorrhizal inoculant. To accommodate for crop rotations, soil samples will still be taken from each replication in years when potato crops are not grown. The trial is being conducted for three years.

2018 Summary & Next Steps:

Planting in 2018 was delayed due to project approvals, so inoculant was only applied at one site. Baseline soil samples were obtained from the cooperator and a fall soil sampling event occurred on the inoculated site. With this delay, the project will only have two full years of data instead of three. We have been working hard with our farm cooperators and partners to ensure that the inoculant is received well before spring planting and is fully incorporated by all four cooperators.

We are also working closely with Collège Boréal to leverage funding for an NSERC project to increase agricultural research in Northern Ontario. They are also supporting us through ground work at the plot sites by assisting with sampling.

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Location of Project Final Report:

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farmnorth.com