EXPERIMENTAL **ACRES**

2024 Project Outlines

Black Dog Acres

Using spent distillery grain as an organic amendment in hay.

SUMMARY:

Doug Mitchell has proposed the use of spent distillery grains as an organic amendment on hay fields. Some reported effects of spent grains are increased phosphorus availability (due to lower pH), increased total nitrogen and organic matter, and possible improvement to plant vigor. Doug began this process in 2023, but will formalize the experiment in 2024, with a split-field design. The experiment will be set up as follows:

Distillery spent grain 1-year old hay	Distillery spent grain New hay planting	Distillery spent grain Old hay field (~8 years)
Chemical fertilizer 1-year old hay	Chemical fertilizer New Hay planting	Chemical fertilizer Old hay field (~8 years)

This is tentative, pending availability of new hay planting.
To monitor this project, we will take baseline soil fertility samples across the field. We will either measure feed quality after harvest or soil micronutrients. We will measure compaction, infiltration, soil structure and green cover throughout the season.
There is the possibility to connect with OMAFRA's SHAP programme to gather baseline soil health data.

SIZE OF TEST AREA

7.5 acre

TESTING

- Soil sampling (P,K, %OM)
- Soil moisture, infiltration, green cover
- Solvita or CO2 Burst Test
- Soil Health Assessment and Plan testing
- Establishment of legume species

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- What is the ideal dilution for application of spent distillery grains?
- How do spent distillery grains affect hay production and establishment?
- What qualitative benefits might be recognized within one year of using spent distillery grain?

Coyote Song Farm and Forest

Comparison of different weed barriers in a market garden.

SUMMARY:

Coyote Song Farm and Forest has proposed a trial of EcoWool pellets and mats to manage weeds, improve soil moisture, and provide nutrients in a market garden setting. Ten plots will be set aside for this project. Five will be used to trial mats, and five will be used to trial pellets. Broccoli, cut flowers and carrots may be used in the trials (subject to change). An unamended garden plot will be used as a comparator.

EcoWool is a circular product created using scrap sheep wool. The mats and pellets allow water to drain through, block sunlight to prevent weeds and cool soil temperatures. As they naturally degrade, nitrogen and potassium are released to the soil. Alternatives are commonly petroleum based plastic weed barriers.

Monitoring will be undertaken to measure weed pressure between the mats, pellets and control sites. This will involve monthly weed counts. Additionally, baseline soil sampling will be completed including phosphorus, potassium, organic matter and a measure of soil microbiology (like Solvita or CO2 burst testing). Yield and plant vigor will be noted through the experiment.

SIZE OF TEST AREA

1125 ft²
(or ten 45' x 30" beds)

TESTING

- Soil sampling (P,K, %OM)
- Weed cover and establishment.
- Soil moisture, infiltration, green cover
- Solvita or CO2 Burst Test
- Yield
- Plant Vigor

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- Are EcoWool mats a good substitute for plastic weed barrier in a market garden system?
- Do EcoWool pellets and mats reduce weed pressure?
- How are the chosen crops affected by the EcoWool products?

INNOVATION

Garden of Apologies

Construction of an off-grid greenhouse to extend the growing season for hot peppers.

SUMMARY:

Erik Begg has proposed the construction of an off-grid greenhouse to extend the production of hot peppers into the shoulder seasons, and potentially into the winter (weather dependent). The greenhouse will cover 320ft2 and will be powered by wind turbine and solar panel. The generated energy will be used to run heaters during the shoulder seasons. This will extend the growing season and increase production of hot peppers. With a longer growing season, new varieties of hot peppers may be introduced to The Garden of Apologies.

Monitoring will be undertaken to measure energy production, greenhouse gas emissions avoided due to the use of renewable energy and the economic impact of off-grid energy production and storage. Pepper yield, and length of growing season will be measured. Baseline soil analyses will be collected across the garden.

Metrics will be compared to the current greenhouse on site as a control.

SIZE OF TEST AREA

320 ft²

TESTING

- Soil sampling (P,K, %OM)
- Energy use, related greenhouse gas emissionsreduction and energy related cost savings
- Length of growing season

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- What renewable energy technologies are best suited in greenhouse production?
- What are the environment and economic implications for building an off-grid greenhouse?
- Could this methodology be replicated on other farms?

CROP/ PLANTING

Jon Karn

Trialing a multi-species cover crop after winter wheat.

SUMMARY:

Jon Karn has proposed trialing a multi-species cover crop after winter wheat. Previously, Jon used a red clover cover crop, but depending on the conditions the red clover was patchy and did not fully cover the ground. To improve on this practice, a multi-species cover crop will be tested. The mix will likely include oats, radish, a legume and possibly another brassica. The cover crop will ideally winter kill, however if there are issues it will be otherwise terminated in spring 2025.

To monitor this project, we will take baseline soil fertility samples, and utilizer qualitative measurements such as infiltration, percent ground cover and compaction. Winter kill and following crop yields will be reporting in 2025. Additionally, OMAFRA's SHAP protocol may be completed to gather baseline soil health data.

SIZE OF TEST AREA

55 acres

TESTING

- Soil sampling (P,K, %OM)
- Ground cover
- Infiltration
- Yield
- Soil Health Assessment and Plan testing

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- Does a multi-species cover crop improve evenness of crop establishment?
- What impacts can be seen after one year of a multi-species cover crop on soil?

CROP/
PLANTING

ANIMAL/
GRAZING

Tullamore Lavender Company

Second year of monitoring no till establishment of new lavender beds.

SUMMARY:

Tullamore Lavender Co (TLC) has proposed additional monitoring of 2023 Experimental Acres plot. In 2023, new lavender beds were established using no-till methods (tarping) to break hay. This method was chosen to maintain good soil structure and drainage, both necessary for lavender production on clay dominant soils.

During year 2, weed pressure will be monitored in these plots. Certain plots will have mulch (either wood or wool) added to suppress weed populations and allow the lavender to establish. An inventory of the weed population will be conducted to determine the most appropriate mulch.

Further, drip irrigation will be installed. Different set-up methods will be compared. Soil moisture, ease of installation and associated labour will be monitored.

SIZE OF TEST AREA

1 acre

TESTING

- Soil sampling (P,K, %OM)
- CO_2 Respiration study
- Infiltration
- Compaction
- Soil Health Assessment and Plan testing

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- How does tarping affect weed establishment in lavender production?
- What are the common weeds found in lavender production?
- What is the least invasive installation method for drip irrigation?

Heartwood Farm and Cidery

Remediation of slope using rotational grazing.

SUMMARY:

Heartwood Farm and Cidery is looking to improve soil health and production on hill slopes. These areas have traditionally had low organic matter. The area has been amended with manure and compost in the past.

To begin this project, soil testing will be conducted to look at baseline fertility of the slope, compared to flat counterparts. This will determine if there is an underlying nutrient imbalance. To address nutrient imbalances, chicken will be rotationally grazed through the pasture after cattle to increase nutrient availability.

Over the course of the project, we will look at green cover, infiltration and plant species to look at the efficacy of the organic amendments. The experimental plot will be compared to a similar part of the landscape that is not facing as severe fertility issues.

SIZE OF TEST AREA

2 acres

TESTING

- Soil sampling (P,K, %OM)
- Ground cover
- Infiltration

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- What is the underlying cause of the low-fertility area in this field?
- Can organic amendments be used to improve fertility on the hillside?

CROP/
PLANTING

Tigchelaar Apple Farm

Determining the efficacy of compost tea to deter pests in an apple orchard.

SUMMARY:

Chad Dickson of Tigchelaar Apple Farm has proposed testing the efficacy of compost tea as a pest deterrent. Chad will be producing compost, compost tea and extracts on site. These products will be foliar and soil applied. Monitoring will be taken to determine if there is an effect on pest or disease pressure, nutrient availability, and soil and plant health.

Additionally, beneficial insects have been introduced to the orchard to mitigate pest populations. Monitoring will be undertaken to monitor pest pressure in the areas where the insects have been introduced. This is subject to beneficial insect availability.

Over the course of the project, we will look at green cover, infiltration, plant health to determine the efficacy of the organic amendments. There is possibility to partner with a private lab to do a genome analysis of the microbial community where the compost products have been used in comparison to the areas where they have not.

SIZE OF TEST AREA

~4 acres

TESTING

- Soil sampling (P,K, %OM)
- Ground cover
- Infiltration
- Monitoring pest pressure across orchards.

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- How can compost products affect plant and soil health?
- Can compost amendments be used to improve fertility in the orchard?
- Is there an impact on microbial populations in areas where the compost products are used?

CROP/
PLANTING

Duane Falk, Mimosa Breeding and Research

Finding the ideal ratio of oats to peas for forage quality and soil health in an apple orchard.

SUMMARY:

Duane Falk has proposed trialing different ratios of an oat and pea cover crop to determine the best forage quality. The science of cover cropping is well established, but farms can run into practical challenges with crop termination and economic feasibility of the practice. If cover crops are able to be harvested as a forage crop in the late fall, farms could reduce their winter feeding costs and lessen challenges in spring planting.

To determine the optimal forage quality, Duane will set up a trial with the following seed mix:

100% oats	75% oats	50% oats	25% oats	0% oats
0% pears	25% peas	50% peas	75% peas	100% peas

Each trial will be measured for forage quality, and soil testing will be completed at the beginning and end of the season. Plots will be replicated.

SIZE OF TEST AREA

0.25 acres

TESTING

- Soil sampling (P,K, %OM)
- Ground cover
- Forage quality
- Weed pressure

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- What is the ideal ration of oats and peas in a cover crop to optimize soil health and forage quality?

Everdale Farm

1. Planting multispecies cover crops at varying seed density between fields in vegetable production.
2. Reducing tillage in market vegetable production.

SUMMARY:

Everdale Farm has proposed two projects for Experimental Acres:

1) Multi-species cover crops will be used to protect soils from erosion and enhance biodiversity. Further, the cover crops will be planted at different seeding rates depending on the soil type and recommendation from Credit Valley Conservation.

2) Reduction of tillage in vegetable beds using a tilther to minimize soil disturbance. Everdale's typical practice is tilling vegetable beds to turn over before a new crop. Tillage is mainly used for weed control and to prepare the seed bed. The tilter will reduce 1-2 tillage passes a year. A tilther is "human-powered" and therefore will reduce fossil fuels emissions.

Over the course of the project, we will look at green cover, plant establishment, weed pressure and labour costs to determine the efficacy of the practices. Soil tests will be taken from two plots.

SIZE OF TEST AREA

0.5 acres

TESTING

- Soil sampling (P,K, %OM)
- Ground cover
- Infiltration
- Soil Structure
- Weed pressure

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- Can conventional tillage be replaced with a lower-intervention alternative?
- Can even ground coverage be achieved across all plots at different seeding rates?

Dave Sealey

Using drone technology to intercrop in standing soybeans to diversify a crop rotation.

SUMMARY:

Dave Sealey has proposed Interseeding a cover crop using drone technology into a standing soybean crop. A licensed drone provider will seed a rye/oat cover crop into soybeans during senescence.

Soybeans are often harvested earlier in the fall, leaving a short growing period prior to first frost. In a corn-soy rotation, the soil is left bare during this time. Utilizing drone technology will allow a cover crop to begin to establish prior to soybean harvest, and improve ground cover over the winter.

Soil fertility, ground cover and 2025 yield will be measured in the field with intercropping and compared to a nearby field without intercropping practices.

SIZE OF TEST AREA

10 acres

TESTING

- Soil sampling (P,K, %OM)
- Cover crop establishment
- 2025 Yield
- Soil Health Assessment and Plan testing

MONITORING WILL BE UNDERTAKEN TO GAIN INFORMATION ON THE FOLLOWING:

- Can drones be used to seed cover crop in a corn-soy rotation?
- What benefits can be seen the following year after Interseeding an oat/rye cover crop?

Alternate formats available upon request