

# CCC Microbiome Project Workflow

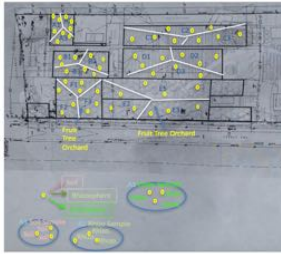
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## Site Map

**Purpose:** To gather soil samples from a three acre area, divided into six smaller areas (A-F), which was subsequently divided into three sub-sites (A1-3, B1-3, C1-3, D1-3, E1-3, F1-3).

**Outcome:** One collection run produces 54 samples.



## Seed Plating

**Purpose:** To create a sterile growth environment for our *Arabidopsis thaliana* preventing unknown microbes from effecting our data.

**Outcome:** The plants will eventually be grown in our soil samples.



## A.t. Transplant

**Purpose:** To grow our plants in the soil samples we've collected from the farm. This procedure tests the potential for plant growth.

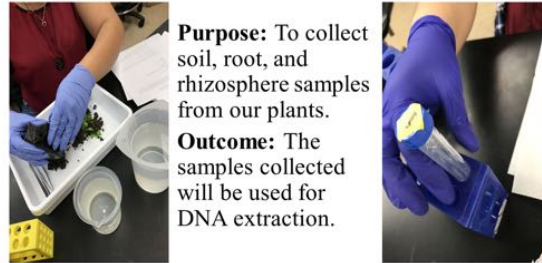
**Outcome:** If successful we can use the soil, roots, and rhizosphere for DNA extraction.



## Root & Soil Sampling

**Purpose:** To collect soil, root, and rhizosphere samples from our plants.

**Outcome:** The samples collected will be used for DNA extraction.



## Growing Bacteria for (+) Control

**Purpose:** To grow bacteria as a positive control in order to help us know what type of DNA we're extracting.

For our bacteria, we've selected five different species:

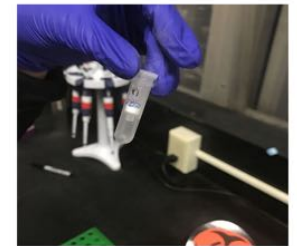
- *Enterobacter aerogenes*
- *Micrococcus luteus*
- *Pseudomonas aeruginosa*
- *Staphylococcus epidermis*
- *Mycobacterium smegmatis*



## DNA Extraction

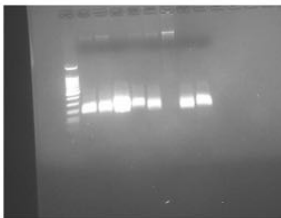
**Purpose:** To extract DNA from our root and soil samples using a DNA extraction kit.

**Outcome:** The DNA will allow us to identify the microbes in our samples.



## PCR & Agarose Gels

**Purpose:** To amplify small segments of our extracted DNA. The amplified DNA is then tested on a agarose gel as a quality assurance step which will tell us if our DNA extraction process was successful.



## Our Goals

- To determine which microbes are present in Urban Tilth's soil over a period of time.
- Develop standard operating procedures with clear instructions.
- Develop team skills to increase a more efficient workflow.
- Maintain accurate documentation of scientific data.