

EFAO HORTICULTURE 2020: Research Protocol

Direct Seeding into Compost Mulch

Farmer-Researchers:

Jason Hayes, Burdock Grove Farm - West

Kristine Hammel, Persephone Market Garden - West

Research Priorities: Soil Health

EFAO Contact: Sarah Hargreaves, sarah@efao.ca

Research Question

What is the optimal compost mulch for direct seeding?

Background

In no-till beds, growers are only able to transplant (vs direct seed) due to particle size of woody compost/mulch. Jason wants to compare different compost/mulches to see which - if any - is better for direct seeding.

Experimental Design

Treatments for permanent beds

- No mulch control
- Compost, made on-farm
- Compost, from Sitler compost screened down to 3/16"
Other potential treatments
- Compost, mushroom compost or peat moss
- Spent coffee grounds

Crops

- Mesclun salad mix - multiple successions throughout the season
- Carrots - 2 seasons (early, late)
- Radish - 2 seasons (early, late)

Jason's beds: 80' long

Kristine's beds: 100' long

Throughout the season, Jason and Kristine will divide beds in 1-meter long sections and randomly assign treatments in blocks along the beds. **For each crop, they will do a minimum of 2 replicates x 2 successions/season for a total of 4+ replicates.** The more replicates the better, with at least 2 successions/season. For each replicate, they will record treatment layout and general planting information (date, seeding rate, etc).

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Example layout for 1 succession..

| | | |
|---------|------------------|---------------------|
| 1 meter | Treatment 1 | succession 1, rep 1 |
| 1 meter | Treatment 2 | |
| 1 meter | Treatment 3 | |
| 1 meter | Control | |
| 1 meter | Treatment 3 | succession 1, rep 2 |
| 1 meter | Control | |
| 1 meter | Treatment 2 | |
| 1 meter | Treatment 1 | |
| 1 meter | etc ... | succession 1, rep 3 |
| 1 meter | | |
| 1 meter | | |
| 1 meter | | |
| 1 meter | | succession 1, rep 4 |
| 1 meter | | |
| 1 meter | | |
| 1 meter | etc. for 8 reps. | |

Research Plan

| Time | Task | Methods & Measurements or Action Item |
|---------------|------------------|--|
| March | Calibrate seeder | Calibrate seeder with # of seeds/ft (so that you can measure % germination) |
| Early spring | Analyze compost | MC Manure Compost Package, Moisture, Nitrogen, NH ₄ -N , pH, Phosphorus, Potassium, Magnesium, Calcium, Sodium, Sulfur, Zinc, Manganese, Copper, Boron, Iron, Aluminum, Organic Matter, EC, C:N ratio, Bulk Density. https://www.alcanada.com/pdf/Submission/A&L-F-003_Manure_Submission_MC_2014.pdf |
| Spring - Fall | Direct seed | <ul style="list-style-type: none"> As per crop plan - for carrots, radish and lettuce Record seeding rate / # of seeds sown per meter |
| | Pre-germination | <ul style="list-style-type: none"> Overhead irrigation and ag 19 row cover, |

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| | | |
|------------------------|------------------------|---|
| | management | monitoring and maintaining adequate moisture. |
| Spring- Fall | Germination | <p>% Germination</p> <ul style="list-style-type: none"> Record % germination for meter-long sub-sections. <p>Yield and quality</p> <ul style="list-style-type: none"> Harvest and weigh carrots from each treatment sub-section. Use pre-weighed or tarred harvest crates, labeled by the treatment sub-section. Assess quality, if possible |
| Deadline October 15 | Submit data and photos | Submit data and photos to Sarah |
| After data submitted | Invoice | Send Sarah invoice for farmer-fee |

Materials

Please list all the equipment that you need for this project. Indicate “in-kind” under Total Cost for any materials that you already own or have access to. For pre-approved research expenses, for which you will be reimbursed, please indicate cost.

| Material | Quantity Required | Total Cost* |
|-----------------------|-------------------|---|
| Compost, on-farm | | In-kind |
| Compost, Sitrler | 1 ton | \$200/ton |
| Mushroom or peat moss | | |
| Compost tests | 3 | MC Manure Compost Package, \$78.75 per sample: Moisture, Nitrogen, NH ₄ -N , pH, Phosphorus, Potassium, Magnesium, Calcium, Sodium, Sulfur, Zinc, Manganese, Copper, Boron, Iron, Aluminum, Organic Matter, EC, C:N ratio, Bulk Density. https://www.alcanada.com/pdf/Submission/A&L-F-003_Manure_Submission_MC_2014.pdf |
| Seed | TBA | \$100 max |
| Total | | \$500 approx. |

* For approved research expenses

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Farmer-fee: \$500 per farmer, invoiced to EFAO after farmer-researchers submit data.

Memorandum of Understanding

Farmer-researchers agree to keep an active membership with EFAO throughout the duration of their trial. Reimbursement for research expenses and farmer-fees will be paid to current members only.

Please also refer to efao.ca/farmer-led-research for a **Memorandum of Understanding** of other responsibilities. Specifically refer to sections:

- *What is expected of me as a farmer-researcher?*
- *What support will I receive from EFAO as a farmer-researcher?*

To check the status of your membership, log in here:

<https://efao.z2systems.com/np/clients/efao/login.jsp> or contact Martina, martina@efao.ca.

References

Curtis Stone, minute 4:50-6 <https://www.youtube.com/watch?v=-vyOMa8Kirg>