

## Microclimates for Summer Lettuce

Farmer-researcher(s): Luke Sheldrick, Terramore Farm - East

Project type: Research Trial

Research priorities: Disease and pest control

EFAO Contact: Sarah Hargreaves, [sarah@efao.ca](mailto:sarah@efao.ca)

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### Objective

To find a system for growing consistent lettuce from midsummer plantings (late August/early September) in eastern Ontario.

### Background

Mid-late summer is a hard time to grow lettuce in southern Ontario, due to hot temperatures. Luke wants to try a combination of landscape fabric and shade cloth to create microclimates to reduce heat and grow consistent summer lettuce.

### Experimental Design

#### Treatments

Luke plans on 2 successions of lettuce with two beds each of three treatments:

- white landscape fabric with no shade cloth (W)
- white landscape fabric with shade cloth for first 2 weeks post transplant (WS)
- black landscape fabric with shade cloth for first 2 weeks post transplant (BS)

The rationale for these treatments is that white fabric alone might be enough to keep soil temperatures cooler. However, shade cloth might also be needed for more complete microclimate manipulation. In the case that white fabric results in high weed pressure, black fabric with shade cloth might provide enough heat protection with fewer weeds.

**First Planting:** Planted into soil that has been cropped out with minimal/moderate weed pressure, mowed then tarped for 2 weeks. They plan and plant in plots of 8 beds, grouping similar crops together thus the soil condition and weed pressure should be similar across the 6 treatment beds.

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**Second Planting:** New land, they will do a soil test in spring and follow suggestions from the agronomist to do our best to balance the soil. There will likely be greater weed pressure, but they will have had the soil under tarp for roughly 8 months so we are optimistic that it will not be terrible. The conditions here will also be similar across the 6 beds, but very different from the first planting.

### Field Layout

Pre-mixed Salanova (50% green crisp and 50% all other varieties), 100' beds with overhead irrigation in the summer.

	<b>Bed1</b>	<b>Bed2</b>	<b>Bed1</b>	<b>Bed2</b>
<b>Planting 1</b>	white fabric W/O shade cloth		black fabric W/O shade cloth	
<b>Planting 2</b>	black fabric + shade cloth (WS)		white fabric + shade cloth (WS)	
<b>Planting 3</b>	white fabric + shade cloth (WS)		black fabric + shade cloth (WS)	

### Installation

Luke will use EMT conduit (one piece cut and then welded to make 12' lengths), inserted into rebar, to cover 2 beds. He will cover the hoops with 12' wide shade cloth (either 12' wide or 2x6' wide pieces sewn together) and will use zip ties to attach the shade cloth to the tunnels.

### Measurements for each variety

#### Yield

##### Preparation before harvest

Luke will identify and mark 6 totes of the same weight (3.7) to use consistently throughout the trial.

## Harvest

At each harvest, Luke will lay out **measuring tape**. He will harvest increments into labeled totes and record bed feet harvested and weight from each plot (not including the bin weight).

Luke will try to measure approximately equal lengths from each plot and try to take measurements from each harvest.

## Soil Temperature

Luke will use Hobo temperature sensors to measure soil temperature in the different treatments.

## Photos

Luke will take photos of each variety throughout the season.

## Research Plan

Time	Task	Methods & Measurements or Action Item
Spring/Early summer	Prep	Find bins with same weight
Mid June	Seeding	First planting
End June	Seeding	Second planting
Mid July	Transplant	First planting
First week in August	Transplant	Second planting
Early August	Harvest	First planting; 2x week for ~ 3 weeks 2x a week
Mid-late August	Harvest	Second planting; 2x week for ~ 3 weeks 2x a week
October 1	Submit data and in photos	Submit data and photos to Sarah
December 31	Invoice	Send Sarah invoice for farmer-fee

\*Please note that if data is submitted after the submission deadline, EFAO staff cannot guarantee that your data will be analyzed and written up before the Research Symposium and/or the next growing season.

### Staff check-ins

Second week of June see if we are on track for space. Then decide after that.

### Materials

Please list all materials, supplies and equipment that will be reimbursed for this project. If possible, please also indicate a short-list of any in-kind materials, supplies and equipment that you will use.

Material	Unit	Quantity Required	Total Cost*	Note
Fabric			TBD	
Conduit			TBD	
<b>Total</b>			~0	

### Farmer-fee

\$500 in 2021, invoiced to EFAO after farmer-researcher submits data.

### Invoices for Farmer-Fees & Reimbursements

#### Research expenses

- Email an invoice along with copies of receipts for all qualified expenses to **research@efao.ca**.
- Expenses can be claimed anytime throughout the year.
- Deadline: December 31, 2021

#### Farmer-fee

- Email an invoice for your farmer-fee to **research@efao.ca**.
- Farmer-fees can be claimed after your data is submitted
- Deadline: December 31, 2021
- If you collect HST for your farm business, you can choose to add HST to your fee.

### Memorandum of Understanding

You agree to keep an active membership with EFAO throughout the duration of your trial.

#### Link to the 2021 MOU

<https://form.jotform.com/210625202854246>

## EFAO 2021: Research Protocol



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](mailto:martina@efao.ca).