

Summer Leaf/Batavian Lettuce Variety Trial

Farmer-researcher(s):

	Farmer(s)	Farm Name	Location
1	Angie Koch	Fertile Ground Farm	St Agatha (West)
2	Ann Slater	Ann Slater Organics	St Marys (West)
3	Hilary Moore	Maplelane Farm	Lanark (East)
4	Martina Schaefer	Spiral Farm	Elora (West)
5	Roger Thiessen and Romina Bortoluzzi	Our Fields Farm	Aylmer (West)
6	Roger Rivest	Nature Lane Farms	Staples (West)
7	Sarah Judd	Meadow Lynn Market Garden	Simcoe (West)

Project type: Variety trial

Research priorities: Seed selection, production and breeding

EFAO Contact: Rebecca Ivanoff, rebecca@efao.ca

Objective

To identify the best summer head lettuce across different farms in Ontario during the 2021 season.

Background

The hot summer weather in Ontario can make it hard to germinate and grow leaf lettuce for a marketable quality. This year, 7 growers from across Ontario - many who participated in last year's trial - will trial six varieties of green leaf lettuce in a randomized and replicated trial over two planting dates.

You can read the report from 2019 here:

<https://efao.ca/wp-content/uploads/EFAO-Lettuce-2019.pdf>

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You can read the report from 2020 here:

https://efao.ca/wp-content/uploads/EFAO-LettuceTrial_2020.pdf

Experimental Design

Teams

Half the farms will gather data from time of seeding to mature head lettuce. They will harvest heads for markets. These farmers are: Ann Slater, Hilary Moore, Martina Schaefer, and Romina Bortoluzzi. These farmers will take observations *once a week* while the heads are maturing in the field until all the heads have been harvested or bolted.

Half of the farms will gather data from lettuce left in the fields past maturity. These farmers are: Angie Koch, Sarah Judd, and Roger Rivest. These farmers will date observations *twice weekly* while heads are maturing in the field until all the heads have bolted.

Varieties

The 2021 Summer Leaf Lettuce Variety Trial includes 6 varieties of lettuce, all of which will be transplanted in the field with 2 replicates each at the two mid-summer lettuce plantings in the season. Each grower will grow all six varieties.

The seed packet will have “code names” for each variety (as well as variety names on the other side) which you can use to implement a blind trial. This is used to reduce observation and measurement bias and keep the trial as “blind” as possible.

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Blind Code	Variety	Type	Colour	DTM	Source	Utility Patent Granted
LS1	Bergam's Green	Green leaf	Green	45 days	Johnny's	No
LS2	Concept	Summer Crisp/ Batavia	Green	51 Days	High Mowing	No
LS3	Encino	Oakleaf	Green	50 days	High Mowing	No
LS4	Muir	Summer Crisp/ Batavia	Green	50 days	Johnny's	Yes (PVP)
LS5	Nevada	Summer Crisp/ Batavia	Green	48 Days	Johnny's	No
LS6	Starfighter	Green Leaf	Green	52 days	Johnny's	No

Planting and Cultivation Recommendations

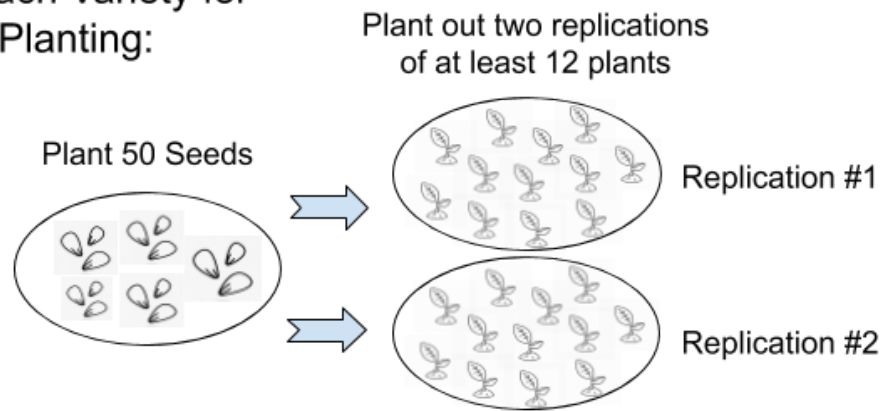
The trial should be grown as you would normally grow lettuce in the field for summer harvest, including your normal bed and row spacing. The table below provides suggestions based on practices discussed in the group. Use the suggestions if they make sense for your farm.

Plot size per variety	12+ heads per section, 2 sections per planting, 2 plantings = 48+ heads total for the trial.
Row and bed spacing	In-row: 12", Between-row: 12-14"
Seeding dates	Your two main summer successions, 2 weeks apart But aiming for transplant the week of June 21st and July 5th.
Transplanting dates	All farmers will aim to transplant planting #1 during the week of June 21st and will transplant planting #2 during the week of July 5th
Days to harvest	45-52 (End of July-mid-August)

Each of you should have received approximately 100 seeds of each variety. **We suggest that you plant 50 seeds of each variety for each planting.** We know that lettuce has a hard time germinating in spring and summer heat. The goal is to get at least 24 seedlings that you can plant 12 per replication.

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For Each Variety for
 Each Planting:



If you have germination issues and you have between 16-24 heads of a variety (for a single planting), plant about half in one replicate and half in the other replicate:

$$16 = 8 + 8$$

$$17 = 9 + 8$$

$$18 = 9 + 9$$

$$19 = 9 + 10$$

$$20 = 10 + 10$$

.....

$$24 = 12 + 12$$

If you have fewer than 16 heads of a variety (for a single planting), plant 10 heads in one replicate and the remainder in the second replicate

If you have fewer than 10 heads, then plant all in one replicate

In all cases, take notes of the # of heads that go in per planting on the data sheet. And take photos.

How to Arrange the Trial in the Field

The trial arrangement is flexible as long as you plant at least 2 sections of *at least* 12 heads per section (and you can plant more lettuce if you have space available).

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Please observe these best practices as best you can and record what you do:

- For each planting, create two replicate blocks of your trial space by dividing the space in half (see layout below)
- Plots may be distributed in multiple side-by-side beds or planted in one bed (see examples below)
 - In each half, plant the varieties in a random order, either by drawing variety names out of a hat, etc. or randomly choosing the flat to transplant next.
 - Each of the 2 replicate sections should have a blocks of 12-20 heads of each variety; the order of the planting will be different in each section.
- Avoid the edge of the field and the end of the bed when finding a place for the trial.
- Avoid areas with known soil, shade or irrigation differences that would affect some plots more than others. That is, try to plant your trial plot in a homogenous area in your field.
- If possible, plant the trial in a spot where it has the same crop on either side of it.
- Use stakes to label the plots AND draw a field map showing the order and location of varieties. This serves as a backup in case the stakes get lost! Feel free to snap a photo of the layout and send to Rebecca, which is a third back-up!

Examples of field layout:

Example 1: Layout with 2 replicate blocks of 6 varieties (12-20 heads/variety) down a single row. Note: each variety is randomly assigned to a section in each replicate block.

Replicate block A						Replicate block B					
LS5	LS2	LS3	LS4	LS6	LS1	LS4	LS3	LS1	LS5	LS2	LS6

Bed length →

Example 2: Layout with 2 replicate blocks of 6 varieties (12-20 heads/variety) planted across multiple rows. Note: each variety is randomly assigned to a section in each replicate block. This layout can also be used within one bed, with two rows of lettuce on each side of the bed.

Replicate block A		Replicate block B	
LS5	LS3	LS6	LS1
LS1	LS6	LS4	LS2
LS2	LS4	LS2	LS5

Bed length →

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Measurements for each variety

Crop Management Records

Farmers will record their seeding dates and transplanting dates, as well as spacing, fertilizer applications, irrigation, mulch and other aspects of crop management. Farmers will record data on this form (**one copy needed per farmer**):

<https://drive.google.com/file/d/113YDjLOnO6312exgavMjYw2S4ApUtiWF/view?usp=sharing>

Germination Rates

Farmers will record the number of seeds (hopefully 50 seeds) that are planted for each planting and then the number of seedlings that they observe two weeks later. Seedlings that take longer to germinate will not be counted in this germination rate. Germinate lettuce seedlings in our regular manner but please note the conditions that you germinate the seeds. Record data on this form (**one copy needed per farmer**):

<https://drive.google.com/file/d/1ZWSjWhEj61yw-9LretBe2bhJNcCn6g78/view?usp=sharing>

Data Gathered by those Harvesting for Market

For those harvesting the lettuce heads at maturity, record data once a week using this recording sheet (**one copy per evaluation date**):

<https://drive.google.com/file/d/1eHM8FaT12NxUfMu3AHJeKn8Ij4ZwQb7o/view?usp=sharing>

Data Gathered by those NOT Harvesting the Lettuce

For those leaving the lettuce to bolt in the field, record data once or twice a week using this recording sheet (**one copy per evaluation date**):

<https://drive.google.com/file/d/1SFB2X5qbsA70Ehr-ei6Eoey8lvtLL-qb/view?usp=sharing>

Flavour Rating

Flavour and overall rating will be recorded once per planting. All farmers participating will do taste tests. You (and others you invite to help!) will taste the leaves of the marketable prime heads. Taste a leaf from near the middle of the head and not the outer leaves or the growing tip. Record the data using this recording sheet (**one copy for each planting**):

<https://drive.google.com/file/d/12ia8NoSz7hZH6DwsLliqBcLaDZOWLy1W/view?usp=sharing>

Overall Rating

Overall ratings will be done at the end of the season when farmers can think back on how the season has played out for each variety. Record the data using this recording sheet (**one copy for each planting**):

<https://drive.google.com/file/d/1WdlafyBdoD4sjZ1q5sjb9cy2ZfrjXLCl/view?usp=sharing>

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Photos

Please take photos of each variety throughout the season. They can upload them in to this [Google Folder](#) or email them to rebecca@efao.ca

Data submission (NEW FOR 2021!)

After recording germination rates, harvest and ratings, please text or email a photo of your data sheet to dillon@efao.ca, or rebecca@efao.ca. Please do this as soon as possible after recording your information (i.e. after every harvest, etc.). This will allow EFAO staff to enter the data in real time, anticipate any issues with data collection, and give us more time to analyze the data in the fall.

Research Plan

Time	Task	Methods & Measurements or Action Item
May (ie week of May 17 and week of May 31)	Seeding	Rebecca will contact you as a reminder
June 21 and July 5	Transplanting	Rebecca will contact you as a reminder
End of July	Observations	Rebecca will contact you as a reminder
End of July - Mid August	Harvest	Rebecca will contact you as a reminder
Deadline September 30	Submit data and photos	Make sure all data and photos are submitted to Rebecca or Dillon
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

Rebecca will check in at the time of seeding, transplanting and then weekly throughout the end of July and the month of August while observations are occurring in the field.

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.

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Material	Unit	Quantity Required	Total Cost*	Note
Lettuce Seed 100 seeds of each variety				Rebecca will source
Postage				Rebecca will mail to farmer-researchers
All seeding, planting and harvesting equipment			In-kind	
Total				

Acknowledgements

Thank you to both High Mowing Organic Seeds and Johnny's Selected Seeds for donating the seeds for this trial.

Farmer-fee

Those harvesting heads for summer will invoice \$250 to EFAO after farmer-researcher submits data. Those letting the heads bolt will invoice \$300 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.

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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>

To check the status of your membership, log in here: [EFAO | Ecological Farmers Association of Ontario](#) or contact Martina, martina@efao.ca.