

EFAO 2024: Research Protocol Working Draft

Italian Eggplant Variety Trial

Farmer-researcher(s): David Alexander and Della Campbell, Everdale - West

Project type: Variety trial

Research priorities: Seed selection, production, & breeding, disease & pest control

EFAO Contact: Rebecca Ivanoff

Objective

This trial aims to find which variety of eggplant has the best disease and pest resistance when grown under a caterpillar tunnel in landscape fabric in organic systems in southern Ontario.

Null hypothesis: That any difference that is seen is random and not significant.

Background

Everdale Farm is a charitable organization growing mixed organic annual vegetables and selling retail/wholesale to support our work in growing produce for the food insecure.

Our farm manager noted both leaf spot on the plants (believed to be caused by disease) and superficial damage to the fruit (believed to be caused by a pest).

We would like to compare how different varieties handle both disease and pest pressure while growing. We have been growing eggplant under plastic for a few years. Usually one Italian/globe and one Asian/long variety. The block Italian type is also more popular with our Harvest Share.

Experimental Design

Varieties

The 2022 eggplant variety trial includes six varieties, all of which will be transplanted in the field within 2 replicates for each planting for a total of 4 replicates for the trial.

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Code	Variety	DTM	OP/F1	Source	Certification	Intellectual Property ¹
EV1	Dancer	65	F1	Johnny's		
EV2	Annina	65	F1	Johnny's	Organic	
EV3	Nigral	65	F1	Johnny's		
EV4	Traviata	70	F1	Johnny's	Organic	
EV5	EP1	n/a		Johnny's		
EV6	EP2	n/a		Johnny's		

1. No Plant Breeders Rights Granted in Canada, see <https://inspection.canada.ca/plant-varieties/plant-breeders-rights/varieties/eng/1300463863953/1300463978655>
2. Open Source Seed Initiative, <https://osseeds.org/>

Planting and Cultivation Recommendations

The trial should be grown as you would normally grow eggplants in the field, including bed and row spacing. The table below provides suggestions based on recommended cultivation practices for eggplants. Use the suggestions if they make sense for your farm.

Plot size per variety	10 plants per variety section, 4 replications = 40 plants total for each variety
Row and bed spacing	In-row: 18"; between row: 30"-36"
Seeding date	6-8 weeks before last frost mid-March
Transplanting dates	Transplant after the last frost mid-May to early June
Days to harvest	57-80 days from transplant
Harvesting	Harvest ripe red eggplants twice a week as you normally would and take all fruit for the last harvest before the frost

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Field Layout

The trial arrangement is flexible as long as you plant 4 replicated blocks of the 6 varieties you chose with each variety plot having *at least* 10 plants of the variety.

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

- For each planting in this trial, create four 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 4 replicate blocks should have a plot of at least 10 plants for each variety; the order of the planting will be different in each replicated block.
- **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 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! Please snap a photo of the layout and send it to Rebecca, which is a third back-up!

Field layout:

Layout with 4 replicate blocks of 6 varieties (minimum 10 plants/variety) planted across multiple rows. Note: each variety is randomly assigned to a plot in each replicate block. This layout can also be used within one bed, with one row of eggplants on each side of the bed.

Replicate block A			Replicate block B		
V5 - 10 plants min	V3 - 10 plants min	V2 - 10 plants min	V6 - 10 plants min	V1 - 10 plants min	V3 - 10 plants min

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V1 - 10 plants min	V6 - 10 plants min	V4 - 10 plants min	V4 - 10 plants min	V5 - 10 plants min	V2 - 10 plants min
Path					
Replicate block C			Replicate block D		
V5 - 10 plants min	V1 - 10 plants min	V2 - 10 plants min	V5 - 10 plants min	V4 - 10 plants min	V2 - 10 plants min
V3 - 10 plants min	V4 - 10 plants min	V6 - 10 plants min	V6 - 10 plants min	V3 - 10 plants min	V1 - 10 plants min

Bed length →

Statistical model

This trial will be a randomized and replicated trial over multiple farms. We will use an ANOVA (or other appropriate statistical methodology) to determine the significance of each measurement across the farmer participants.

Measurements

Crop management records

The following information will be collected on this sheet once a year:

- Seeding date
- Transplant date
- In-row spacing
- Between-row spacing
- Configuration (number of rows/beds)
- Fertilizer applications (rates, amounts, and date)
- Irrigation
- Mulch
- Other products or notes
- [Printable sheet](#)

Field Map

- 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! **Please snap a photo of the layout and send it to Rebecca**, which is a third back-up!

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- [Printable Sheet](#)

Germination both % and date (Count)

The following information will be collected on this sheet once a year:

- Germination rates will be taken **at 14 days post seeding**
 - Total number of seeds sown
 - Total number of seeds that germinated after 12 days
 - Germination notes (how did you seed your cells, place, other information)
- [Printable Sheet](#)

Early Season/Post Transplant Vigour Ratings

The following information will be collected on this sheet once during the season:

- Early season vigour looks at seedling size, health, and growth rate after transplant
- Early season vigour will be taken once around **1 month after transplant**
 - [Printable Sheet](#)

Disease and Pest Observations

The following information will be collected on this sheet **throughout the season**:

- Growers will make notes of any disease or pest issues that occur on okra varieties throughout the year
- [Printable Sheet](#)
- Use [OMAFRA's new Scouting Calendar](#) as needed

Yield (Sheet for one, twice or thrice weekly)

The following information will be collected on this sheet **at every harvest throughout the harvest window/period**. This can be as frequent as the season and that crop dictate. **This can mean up to 3 times a week during the hottest part of the year.**

- Marketable
 - weight of marketable harvest (lbs/g)
 - number of marketable pods
- Non-marketable (over ripe, diseased, etc)
 - weight of non-marketable harvest (lbs/g)
 - number of non-marketable pods
- [Printable Sheet](#)

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Marketability

The following information will be collected on this sheet **once during the season:**

- How do the different varieties of okra sell (at market, CSA, or other outlets)? Were people interested in them?
- [Printable Sheet](#)

Flavour and texture

The following information will be collected on this sheet **once during the season:**

- Notes on Flavour (sweet, bitter) and texture (hard, slimy)
- Flavour and texture will be taken once a year in the middle of harvest season
 - Rating rubric below
- [Printable Sheet](#)

Overall performance

The following information will be collected on this sheet **once at the end of the season:**

- Farmers will rate their impression of the overall performance of each variety by giving a rating and **writing some notes!** Stories are always good!
 - Rating rubric below
- [Printable sheet](#)

Photos

Please take photos of the following times/items:

- ☐ Farmer-researchers with FLRP sign
- ☐ Germination
- ☐ Transplanting into the field (during and finished)
- ☐ Ideal marketable, and unmarketable eggplant
- ☐ A photos that demonstrates the differences between the varieties
- ☐ Harvest actions shot
- ☐ Tasting
- ☐ Other

[Please upload photos to this folder](#)

Social media

If you are posting about your trial on social media, please tag EFAO, @efao2.

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Research Plan

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.

Time	Task	Methods & Measurements or Action Item
Mid to late April (depending on your farms systems)	Seeding	Start seeds in cells
Early June	Transplanting	Transplant seedlings into field
Throughout the year	Observations	Throughout the season check measurement sections
July, August, September	Harvest	Harvest eggplant when ready
Throughout the year	Submit data and photos	Send data to EFAO staff
September 30, 2023	Make sure all your data and photos are submitted	Send data to EFAO staff
December 31, 2024	Farmer-fee and research expense invoice with receipts for expenses	Submit invoices at this site: https://efao.ca/data/
January/February 2025	Finalize and publish research report	Work with EFAO staff to review polished research report for publication.

Staff check-ins

Rebecca will email David in late May before eggplants go into the ground.

Farmer-fee

Farmer-fees for this project are \$1000 in total. You are eligible for 50% (\$500) for implementing the trial, and 50% (\$500) for submitting data and photos. EFAO staff will be in

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touch in the fall with invoicing instructions and deadlines. If you decline, cancel, or defer the trial, you also forfeit the payment

Memorandum of Understanding

Please fill out the MOU at <https://airtable.com/appPSElrt17OMWXia/shrgHQSEj7yONdGSm>.