

Rutabaga Variety Trials - 2021

Instructions for On-Farm Sites across Canada

Thank you for participating in the Canadian Organic Vegetable Improvement (CANOVI) variety trials!

This project is a collaboration between the Centre for Sustainable Food Systems at the University of British Columbia and the Bauta Family Initiative on Canadian Seed Security at SeedChange. One of the goals of this project is to create a national network and platform where existing varieties and new breeding lines can be evaluated for their performance in a range of regional organic and ecological farming conditions through on-farm variety trials.

The information gathered through this trial network will be used to help farmers:

- **Identify the best-performing varieties** for their regions, both for market garden production and seed production
- **Identify varieties that would be suitable parents** for future regional breeding projects
- **Build the capacity to conduct on-farm variety trials** useful for their farming operation

2021 Rutabaga trial

Varieties

There is a set of 5 “**core**” varieties that all participants will trial, and 5 “**add-in**” varieties that you had the choice to select when you completed the sign-up survey. Everyone will therefore grow a minimum of 5 varieties and a maximum of 10 varieties. The “core” varieties were selected based on the varieties that had the best performances in 2021. The “add-in” varieties include new requests from trial participants, as well as repeat varieties from 2020. **See p. 2**

Trial Plots

For each variety, we ask that you plant **12 row-feet** of each variety with approximately 4-6 plants per foot. Depending on your farm layout, you may choose to plant a single row or multiple rows per bed. **See p. 3**

Planting

Rutabaga should be direct-seeded in accordance with your normal planting dates and/or the recommended dates for your region. Varieties range from 85-120 days to maturity and will tolerate some cold. **See p. 3**

Variety evaluation and data collection

Trial evaluation will be conducted with the desktop or mobile SeedLinked app. Participants will evaluate traits of interest for each variety on a scale of 1-5 (1=poor, 5=outstanding). New for 2021, we have provided a **rubric with evaluation guidelines** for each trait. **See p. 4-7**

Stipend

Regardless of the number of rutabaga varieties you trial, you will receive a **\$300 stipend** for **planting and evaluating** the trial. If you are unable to evaluate the trial, you will still receive a \$100 stipend for planting it.

2021 Rutabaga Varieties

All varieties are open-pollinated (OP).

| Variety | Trial category | Type | Days to maturity | Catalogue description link |
|---------------------------------------|----------------|------------|------------------|--|
| Altasweet | Core | Purple top | N/A | Altasweet (Prairie Garden Seeds) |
| Helanor | Core | Purple top | 90 | Helanor (Johnny's) |
| Joan* | Core | Purple top | N/A | Joan (Wild Garden Seeds) |
| Laurentian* | Core | Purple top | N/A | Laurentian (Prairie Garden Seeds) |
| Nadmorska* | Core | Green top | 85-100 | Nadmorska (Siskiyou Seeds) |
| Fortin Family Heirloom* | Add-in | Purple top | 100-120 | Fortin (Solstice Seeds) |
| Gilfeather* | Add-in | Green top | 85 | Gilfeather (Siskiyou Seeds) |
| York | Add-in | Purple top | 115-120 | York (Vesey's) |
| De Krosno | Add-in | Green top | N/A | De Krosno (La Société des Plantes) |
| Green-topped Melfort (Melford) | Add-in | Green top | N/A | Atlantic Canada Regional Seed Bank |

*Due to seed shortages, these varieties were sourced from different suppliers than in 2020.

Planting and Cultivation Recommendations

The table below provides *suggestions only* for trial implementation. **Please grow this trial as you would normally grow rutabaga**, including your normal bed and row spacing, as the purpose of on-farm trials is to test varieties in your farm system!

| | |
|------------------------------------|---|
| Seeding | <ul style="list-style-type: none"> ● Direct seed ● Please plant according to the appropriate dates for your region. Generally, for best quality, plant between mid-June to mid-July so that harvest occurs in the cool weather of fall after a few light frosts. |
| Trial layout | <ul style="list-style-type: none"> ● You will receive the core set of 5 varieties and any add-in varieties that you requested in the sign-up survey. ● Plant 12 row-feet of each variety, with about 4-6 plants per foot. ● Each variety can be planted in a single row or in multiple side-by-side rows in a bed. Growing guides recommend 12" spacing between rows in a bed, but please use the between-row spacing that you would typically use. ● Avoid the edge of the field and the end of the bed when finding a place for the trial, as well as any areas with known soil, shade, or irrigation differences that would affect some plots more than others. ● A border around your trial of buffer crops not included in your trial is recommended to prevent crop loss from mechanical damage or pests/critters. The crops that make up the border can be other varieties of rutabaga, or other types of crops. ● 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 note plant spacing between and within rows. ● Feel free to grow additional plants for market or your own use! We ask that you keep these plots separate from your trial plots so that the trials are of uniform size across farms. |
| Pest and disease management | <ul style="list-style-type: none"> ● Rutabaga can be protected from cabbage root maggots and flea beetles with floating row covers at time of planting. See the following resource (Agri-Réseau, in French only), for detailed guidelines on the use of nets for insect management. ● Rutabaga is also susceptible to club root and other soil-borne diseases affecting Brassicas, so it is important to practice good crop rotation and avoid transferring soil between and within farms. |
| Days to harvest | <ul style="list-style-type: none"> ● The varieties range from 85 to 120 days to maturity (DTM), and many are quite cold tolerant and even get sweeter with some frost. |

Data collection

- We will be using the [SeedLinked](#) online platform for data collection, as we have in 2019 and 2020.
- You will receive an **email invitation** for the rutabaga trial.
- Data can be entered into SeedLinked from the field via [iOS](#) and [Android](#) apps. If you don't have cell data service in the field, you can still enter data into the app, and it will sync with the database once you reach a data connection.
- You may also enter data on your **computer's web browser**. We will provide **downloadable paper data forms**, which allow you to evaluate varieties using paper and pencil and for later entry into SeedLinked.
- SeedLinked has **updated their user interface for 2021**, and the following videos offer an orientation to the new platform.
 - [What is SeedLinked?](#)
 - [How to Accept a Collaborative Trial](#)
 - [Reviewing a Trial](#)
- We're offering a **SeedLinked orientation webinar on June 3** at 1pm Eastern / noon Central / 11am Mountain / 10am Pacific, which will be recorded for those who can't be there live.

Evaluation

- Before rating varieties, you'll be asked to enter the **planting date**. For radicchio, please enter your transplanting date.
- For each variety, you'll be asked to **rate attributes** including germination, vigour, bolt resistance, appearance, marketability, yield, uniformity, and flavour.
- First, **survey all of the varieties** to get a feel for the range of characteristics they show.
- Then **rate them on a scale of 1-5 using the rubric below**, rather than ranking them best to worst.
- **Trust your judgment** and your knowledge of the crop!
- **If a trait doesn't apply to your planting** -- for example, if you're harvesting before frost, you can't evaluate winter hardiness -- please just leave it blank.
- We encourage you to add **pictures and free-form notes** about these varieties!
- Before you complete your trial, you'll be prompted to enter **harvest dates** and general information about soil quality, weather, and any other factors that might have influenced the trial.
- When you complete the trial, your data will be combined with that of other participants and shared with you via an interactive Tableau interface.

Rubric for evaluations

In order to make results more easily comparable among sites and clarify general trait descriptions, we are offering a rubric (see table on following page). Based on grower feedback from 2020, for the “disease resistance” trait we will focus on Brassica clubroot disease (*Plasmodiophora brassicae*). The clubroot pathogen infects the plants via root hairs or wounds, causing cyst-like swellings on the root. For the “insect resistance” trait, we will focus on root damage caused by the cabbage root maggot (*Delia radicum*). This insect pest feeds on the roots of the crop and leaves feeding tunnel damage that can make the root unmarketable.



Swellings caused by the clubroot pathogen on rutabaga



Tunnels caused by cabbage root maggot on rutabaga

| Rutabaga Evaluation Rubric | | 1 | 2 | 3 | 4 | 5 | |
|---|--|--|--|---|--|--|-----------------------------|
| Trait | Guidelines | Poor | Fair | Acceptable | Good | Outstanding | Timing |
| Germination | <i>Approximately what percentage of seeds germinated?</i> | Less than 50% | 50-75% | About 75% | More than 75% | All or almost all | <i>14 days after sowing</i> |
| Vigour | <i>How vigorous (i.e. robust, fast-growing, resilient to stress, etc) is this variety?</i> | Weak and slow-growing plants | Below average vigour | Acceptable growth and some resilience to stress | Strong growth | Exceptional growth and resilience to stress | <i>Mid-Season</i> |
| Uniformity | <i>How uniform are roots with respect to maturity, size, and appearance?</i> | Extremely variable | Quite variable | Acceptable variability | Quite uniform | Very uniform | <i>Harvest</i> |
| Winter hardiness | <i>How well do the leaves of this variety hold up to cold temperatures?</i> | Leaves do not survive cold temperatures. | Leaves of some plants survive cold temperatures but are heavily damaged. | Leaves of some plants survive cold temperatures with good quality, but some do not. | Leaves of all plants survive cold temperatures, but some lose quality. | All leaves maintain good quality after cold temperatures | <i>Harvest</i> |
| Appearance (colour, shape, smoothness) | <i>How visually appealing is this variety when ready for market? Consider the presence of unappealing side shoots and excessive root hairs here. (Try not to consider insect or disease damage in this rating)</i> | Ugly or off-putting | Just OK | Appealing enough for market | Consistently appealing | Gorgeous | <i>Harvest</i> |
| Disease Resistance (Brassica clubroot) | <i>How much clubroot disease damage is visible? Rate for clubroot ONLY, not other diseases that may occur. Please record any other diseases in the "comments" section, and share photos.</i> | Heavy damage on most or all roots-crop destroyed | Damage that excessively reduces the marketable yield of the crop | Some damage, roots still marketable | Very light damage | No visible signs of disease | <i>Harvest</i> |
| Insect Resistance (cabbage maggot) | <i>How much damage by cabbage maggot is present on the roots? Rate for cabbage maggot ONLY, not other insect pests that may occur. Please record any other insect damage in the "comments" section, and share photos.</i> | Heavy presence on all roots-crop destroyed | Damage excessively reduces the marketable yield | Some damage, roots still marketable | Very light damage | No visible signs of insect damage | <i>Harvest</i> |

| Rutabaga Evaluation Rubric | | 1 | 2 | 3 | 4 | 5 | |
|----------------------------|--|--|--|--|-------------------------|--------------------------------------|--------------------|
| Trait | Guidelines | Poor | Fair | Acceptable | Good | Outstanding | Timing |
| Yield | <i>How well does this variety yield, in context of other vegetable varieties you grow?</i> | Poor yield - Couldn't justify growing it | Yield is just OK, but might give another try | Sufficient yield | Solid yield | Exceptional yield | <i>Harvest</i> |
| Marketable Yield | <i>Approximately how much of the yield was marketable or saleable?</i> | Less than 50% | 50-75% | About 75% | More than 75% | All or almost all | <i>Harvest</i> |
| Marketability | <i>How easy would it be to sell this variety in your market, given its quality at harvest?</i> | Difficult to sell | Expect limited sales | Expect average sales | Expect strong sales | Would sell out! | <i>Harvest</i> |
| Flavour | <i>How much do you like the overall flavour of this variety? Please taste varieties <u>cooked</u>.</i> | Would not eat again | Might try again | Would eat again, but wouldn't seek out | Would eat again happily | Would seek it out and rave about it! | <i>Postharvest</i> |

Resources

We encourage interested growers to read [On-Farm Variety Trials](#) by the Organic Seed Alliance, a detailed how-to-guide on how to implement variety trials for your own farm.

Rutabaga resources, growing guides, and appreciation:

- Growing guides:
 - [Johnny's grower's library](#)
 - [Atlantic Provinces Growing Guide](#)
- Insects and Disease:
 - [Les filets anti-insectes ou comment garder les insectes à distance de vos légumes](#) (MAPAQ, French only)
 - [Cabbage root maggot info sheet](#) (University of Massachusetts Extension Vegetable Program)
 - [Integrated Clubroot management for Brassicas](#) (Oregon State University)
- Variety trial results
 - [OSA Organic Rutabaga Trial results \(California\)](#)
- Appreciation and culinary aspects
 - Culinary Breeding Network, Brassica week: [The Humble Rutabaga, Hannah Swegarden \(Cornell University\)](#)

CANOVI is a collaboration between the [Centre for Sustainable Food Systems at the University of British Columbia Farm](#) and the [Bauta Family Initiative on Canadian Seed Security](#) at SeedChange.



We welcome your questions about the CANOVI variety trials! Please contact the Bauta Family Initiative on Canadian Seed Security [regional coordinator](#) for your region:

- **Atlantic Canada:** Steph Hughes, SeedChange, shughes@weseedchange.org
- **Quebec:** Hugo Martorell, SeedChange, hmartorell@weseedchange.org
- **Ontario:** Rebecca Ivanoff, Ecological Farmers Association of Ontario, rebecca@efao.ca
- **Prairies:** Iris Vaisman, Organic Alberta, iris.vaisman@prairieorganicgrain.org
- **British Columbia:** David Catzel, bcseeds@farmfolkcityfolk.ca

You may also contact one of the CANOVI researchers:

- Solveig Hanson, UBC Centre for Sustainable Food Systems, CANOVI Lead Researcher; solveig.hanson@ubc.ca; 604-354-4670.
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THANK YOU TO OUR FUNDERS!



The Organic Science Cluster 3 is led by the [Organic Federation of Canada](#) in collaboration with the [Organic Agriculture Centre of Canada at Dalhousie University](#), and is supported by the [AgriScience Program](#) under Agriculture and Agri-Food Canada's [Canadian Agricultural Partnership](#) (an investment by federal, provincial and territorial governments) and over 70 partners from the agricultural community.