

Orange and Red Carrot Variety Trials - 2020

Instructions for On-Farm Sites across Canada

Project Context

Thank you for participating in the Canadian Organic Vegetable Improvement (CANOVI) network. 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 (formerly USC Canada). 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.

Varieties that are sold to organic and ecological farmers in Canada have not necessarily been trialed on sites that reflect the diversity of Canadian farming conditions. Through a co-ordinated trialing network across Canada and integration with partner networks in Canada and the United States, we can gather information about both existing varieties and new breeding lines grown under organic management and across a range of farming conditions.

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

- Identify the best-performing varieties in your region, both for market garden production and seed production
- Identify which varieties would be suitable as parents for future regional breeding projects
- Build the capacity of farmers to conduct on-farm variety trials useful for their farming operation

For any questions you may have about the variety trials, please contact the [regional coordinator](#) for the Bauta Family Initiative on Canadian Seed Security (seedsecurity.ca) 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:

- Alex Lyon, UBC Centre for Sustainable Food Systems, CANOVI Lead Researcher; alexandra.lyon@ubc.ca; 604-710-2096
- Helen Jensen, Bauta Initiative Research Manager; hjensen@weseedchange.org; 514-433-8445

A NOTE ABOUT VARIETY TRIALS IN THE COVID-19 CONTEXT

On behalf of our team, we sincerely hope that you and yours are healthy and safe in the midst of the Covid-19 crisis. In Canada, and throughout the world, many agricultural research projects have been postponed or scaled-back, and while planning our season, we weren't sure if you would have the capacity or the interest to participate. We have been pleasantly surprised to find that interest in the on-farm variety trial program has actually increased this year. We thank you for your continued engagement!

In the past few months, there has been widespread recognition of the importance of resilient food systems, and local food systems. By doing this work, you're helping create knowledge that is useful to local food and seed producers. While this trial does not focus on seed production, those who wish can use it as an opportunity to explore seed production by saving seed from the OP varieties included in the trials, or by partnering with a seed grower in your region to do so. A number of resources on seed saving can be found on our website (www.seedsecurity.ca).

We understand that everyone is living with a great deal of uncertainty and facing pressure to adapt their businesses and lives to rapid change. We understand that your circumstances may change during the course of the season in a way that impacts your ability to continue the trials. If this happens, please get in touch with your regional coordinator to let them know.

Carrots for trialing

Two market classes of carrots (*Daucus carota*) will be trialed in 2020:

Market Class	Number of Varieties	Key Traits for Evaluation
Orange, Nantes-shaped storage carrots	4 required "core" varieties, 8 optional "add-in" varieties	Storage quality, appearance, shape, flavour, vigor
Red/ purple carrots	5 "core" varieties	Delayed bolting, flavour, appearance, vigor

The orange trial consists of both open-pollinated (OP) and hybrid (F1) varieties, while the red/purple trial consists of mostly OP varieties. Both trials are for a May/June planting window and fall (September/October) harvest.

For the orange carrot trial, you will receive the six core varieties as well as any optional varieties you requested through the online sign-up form. For the red trial, growers will be sent all available varieties.

Growers may also choose to add additional varieties of their own choice to their trial to make it more useful for their specific farm. Farmers will need to source their own seeds for any additional varieties they wish to add. Please let your RC know the names of any varieties you have added, so that we can make a space for you to enter data about the variety in the SeedLinked platform. See the tables below for the list of varieties.

Orange Carrots

Market Class	Trial Group	Variety	Seed Company	F1/OP
Nantes/Storage	Core	Rumba	BC Eco Seed Co-op	OP
Nantes/Storage	Core	Dulcinea	Fruition Seeds	OP
Nantes/Storage	Core	Bolero F1 (CHECK)	Johnny's Selected Seeds	F1
Nantes/Storage	Core	Naval F1	High Mowing Organic Seeds	F1
Nantes/Storage	Add-in	Bengala	Osborne	F1
Nantes/Storage	Add-in	Dolciva	High Mowing	OP
Nantes/Storage	Add-in	Jerada F1	Osborne	F1
Nantes/Storage	Add-in	Miami F1	High Mowing Organic Seeds	F1
Nantes/Storage	Add-in	Nantes di Chioggia	Seeds from Italy	OP
Nantes/Storage	Add-in	Nash's Nantes	BC Eco Seed Co-op	OP
Nantes/Storage	Add-in	Newhall	Osborne	F1
Nantes/Storage	Add-in	St-Valery	BC Eco Seed Co-op	OP

Red carrots:

Market Class	Trial Group	Variety	Seed Company	F1/OP
Red	Core	Atomic Red	Willhite Seeds	OP
Red	Core	Red Sun	High Mowing Organic Seeds	OP
Red	Core	Dragon	High Mowing Organic SeedsO	OP
Red	Core	Nutri Red	Territorial	OP
Red	Core	Vampire	BC Eco-Seed Coop	OP
Red	Limited quantities	Kyoto Red	Kitazawa	OP

Notes on Red Carrot Varieties: Many red carrot varieties have been selected in southern or tropical climates and are prone to bolting in northern climates. While we hope to ultimately use this trial information to support participatory breeding for bolt resistance, growers should be aware that existing varieties will have higher bolting than orange carrots.

Planting and Cultivation Recommendations

The table below provides *suggestions only* for trial implementation. **The trial should be grown as you would normally grow carrots, including your normal bed and row spacing - the purpose of on-farm trials, is to test them on your farm!**

Seeding dates	<ul style="list-style-type: none"> ● Mid-June to early July depending on weather conditions and your normal planting dates for storage carrots. ● UBC Farm seeds carrots for storage around the last week of June or first week of July.
Plants per Variety	<ul style="list-style-type: none"> ● 12 row feet per variety per replication ● Replications: 1 per variety, 2 replications of the check variety
Row and bed spacing	<ul style="list-style-type: none"> ● At UBC Farm we plant 2 rows/bed, with 14" between rows. ● Bed width may vary depending on tillage methods; at the UBC farm beds are 3.67 ft center-to-center. ● We suggest no smaller than 10" (25 cm) between-row spacing, unless you have had previous success this way.
Seeding rate and thinning	<ul style="list-style-type: none"> ● Plots will require hand-seeding, as we are not able to provide enough seed to work with mechanical seeders. ● Aim for in-row spacing of approximately 1" (2.5cm). The most reliable way to accomplish this is by seeding as evenly as possible and then thinning. ● We have provided more seed than needed (at least 300 seeds/variety). We have noted expected germination rates on the seed packets; please seed more of varieties with lower expected germination.
Evaluation	<ul style="list-style-type: none"> ● 3-4 weeks after planting for seedling vigour; at maturity; and for storage or field holding in fall/winter.
Days to harvest	<ul style="list-style-type: none"> ● 100-120 days depending on weather conditions and your judgement. Some red carrot varieties are traditionally harvested in December/January in mild climates.
Weeding and rust fly	<ul style="list-style-type: none"> ● Please use organic pest and disease control measures you would normally use. ● If desired, you may use row cover to prevent carrot rust fly damage. However, if you are specifically trialing with the goal of comparing rust fly resistance it would be more effective to expose the trial to carrot rust fly pressure. ● Use flame weeding if it is part of your normal management practices.

How to Arrange the Trial

Please plant one plot (12 row-feet) of each variety. In previous years we have asked you to plant two plots of the check variety but this is no longer a requirement. 12 row feet could be planted in a single row or in multiple side-by-side rows in a bed. Please observe these best practices to the extent possible:

- Plots may be distributed in multiple side-by-side beds or planted in one bed.

- 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 carrots, or other types of crops.
- 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!

If you have any questions, please contact your regional coordinator. We strongly encourage growers to read [On-Farm Variety Trials](#) by the Organic Seed Alliance - an incredible how-to-guide on how to implement variety trials for your own farm.



At UBC Farm, carrots are planted in 2 rows of 6’ each with a label at the head of each row. The label has the variety code on the front and the plot number (shown here) in the back. But even with good labeling a layout map is crucial in case stakes go missing!

Please observe the layout below as an example of how you can organize your trial:

Border		
Border	Dulcinea	Border
	St Valery	
	Naval	
	Nash’s Nantes	
	Rumba	
	Dolciva	
	Bolero F1 (Check)	
	Bengala	
Border		

Evaluation

This year, we will again be using an online platform for data collection called [Seedlinked](#). This platform helped us make final results of the trials accessible to farmers faster in 2019. Data can be entered on SeedLinked directly in the field through the use of apps for iOS or Android. It is also possible to enter data by logging on to the platform from a computer. We will provide downloadable .pdf versions of paper data forms. These give you the option to collect your data using paper and pencil in the field and enter the data in the SeedLinked platform at a later time.

A helpful video tutorial for using SeedLinked can be found on Youtube [here](#). Webinars to orient participants to the use of “Seedlinked” for data entry were held in April 2019. See the webinar at the links below:

- **English:** <https://tinyurl.com/y6a29elj>
- **French:** <https://tinyurl.com/y5jhw8w>

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