

# SEED SAVING

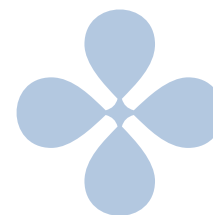


2023



# WHAT IS COMMUNITY ROOTS?

**Community Roots: Local Food for Climate Action is a project of the Western Environment Centre that highlights the vital connections between ecosystems, food, and people. Through workshops and community programs, Community Roots brings people together to gain knowledge and skills to build a more regenerative, nature-based local food system for the sustainability of our communities and our planet.**



Regenerative growing is about creating self-sufficient natural gardens that work with the ecosystem rather than against it. A regenerative garden aims to actively restore the health of the soil and the ecosystem, support diversity, and restore habitat through nature-based growing practices. A regenerative food system produces food on land and at sea in ways that work in partnership with the world around us.

Through hands-on food skills workshops led by local knowledge holders, and interactive neighbourhood programs, the Community Roots project highlights the vital connections between our ecosystems, our food, and our people.

## ABOUT WEC

Western Environment Centre is dedicated to engaging our community in food and climate action through impactful, educational initiatives. Since 1998, we've grown from a small citizens' group to a thriving environmental organization in western Newfoundland.

What we do:

- Create and run hands-on, interactive community programs; and
- Engage in public dialogue and policy

Our two main areas of focus are:

- Sustainable local food systems; and
- Climate action

# LOCAL KNOWLEDGE HOLDER

## Megan Holdfast

Megan is a farmer and artist loving the land in Little Rapids, Newfoundland and Labrador, Canada. When asked why she enjoys sharing seed saving skills, she explained "Plants have so much to teach us and it seems that it's the seeds that are doing the saving! There is so many wonderful reasons to learn the skill and practice seed saving in our communities- it deepens [our] connection [to the land and each other], especially in autumn"

This manual was authored by Megan and formatted by Western Environment Centre.



# CHOOSING YOUR SEED

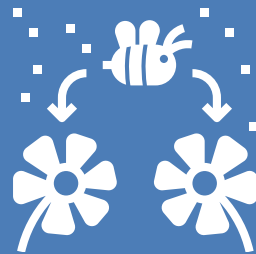
## Appropriate Varieties

- Make sure the seed you are using for your seed crop is high quality and true-to-type (true to the characteristics or particular cultivar you're looking for in your crop).
- Ensure the seed is 'open-pollinated.' Hybrid seed will not produce progeny that resembles its parent plant.
- Research your crop to ensure they are suitable to your local climate and shorter growing season.
- Are they warm season or cool season vegetables? Will you need to start any plants indoors to give them a head start?

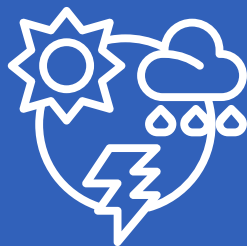
High Quality and True-to-Type



Open Pollinated



Suitable to Local Climate



Warm Season or Cool Season





# GETTING TO KNOW YOUR SEED CROPS

## Scientific Name

- What is the crop's scientific name? Examples: *Brassica oleracea* var. *capitata* (cabbage) and *Brassica oleracea* var. *sabellica* (kale); *Beta vulgaris* subsp. *vulgaris* (swiss chard) and *Beta vulgaris* (beets).
- The first word in a scientific name is the plant's genus, the second is the specific epithet. If two plants share these names, they are the same "species" even though the crop is different and will cross-pollinate.

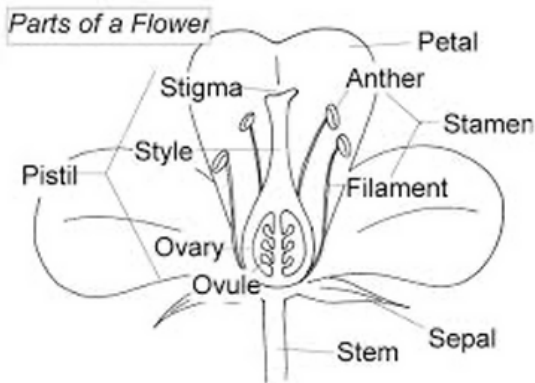
## Annual or Biennial

- Annuals require one season to complete their life cycle and produce seed (Examples: Spinach, lettuce, squash and tomato). Biennials require two seasons (Examples: Carrot, beet, rutabaga, kale and cabbage).
- Biennial crops require special consideration and research. Here's a basic summary of the process:
  - First you must determine whether it will over-winter in the ground. Usually, most root vegetable biennials will not over-winter in temperatures that regularly drop below  $-10^{\circ}\text{C}$ . Your second option is to dig them up in the fall and properly store them in a root cellar or cooler. That way you can select the best roots for seed.
  - To prepare roots for storage the tops are trimmed back to 1.5"-1". They are stacked in totes or containers with vents to allow plenty of air-flow. In a cooler, they are then covered in clean wood shavings so they absorb extra moisture and deter rot. In a root cellar you can cover them with clean moist sand or even undecayed deciduous leaves. Layer materials carefully in-between roots to prevent them from touching each other.
  - They need to be in cold storage long enough to reach vernalization (a certain amount of time in dormancy). Roots can be replanted as soon as the ground can be worked in the spring.
  - Be sure to space your seed roots much further apart in their second year, most biennial's flower stalks get quite wide and tall!

# GETTING TO KNOW YOUR SEED CROPS

## Pollination

- Research your plant’s pollination process and familiarize yourself with the flower structure. Does it self-pollinate? Or, does it require insects, or wind for successful pollination?
- Where is your crop on the inbreeding to outbreeding spectrum? This will affect isolation distances and how many plants you will need to grow for successful pollination.
- What does your crop need to ensure good pollination and fertilization? If it requires warm temperatures, make sure it is flowering during June-July. If it requires a high insect population like bees, it may need to be hand-pollinated if the insect population is low. If it is wind pollinated, it will require a high population and density of plants to ensure pollination.



Self-Pollinating and Cross-Pollinating Species on a Spectrum

Inbreeders			Outbreeders					
Self	Insect		Wind					
5ft	10ft	20ft	500ft	1mile	1-2miles	2+miles		
Peas	Lettuce	Tomato	Pepper	Squash	Brassicas	Umbels	Amaranths	Corn
5 Plants acceptable			20-40 Plants min	60-80 Plants min		100-120 Plants min		200 Plants min

## Flowers

- Does your plant have perfect flowers (both male and female parts in one flower)? Or is it monoecious, or dioecious? Monoecious plants have both male and female flowers on the same plant (but separate flowers). Dioecious are separate, they are either male plants or female plants. These differences impact how plants are pollinated (and how many plants you need).

# ISOLATION

Isolation is required if you are trying to grow more than one variant or cultivar within the same species (this includes if your nearby neighbor is too). There are also some instances where wild flowers in the same family can cross-pollinate, like Queen Anne's Lace with carrots (both *Daucus carota*). If you are just starting out and have limited space, it is best to grow and save seed from one species per growing season.

There are three ways to isolate your plants:



Isolation with distance. This is the most feasible for home seed growers in Newfoundland. This distance varies from species to species. Inbreeding plants require less distance than outbreeding plants. Refer to- Self and Cross Pollinating Species Spectrum.



Isolation with time. If possible, time your planting so your first planting is pollinated and set seed before your next planting has begun flowering (this is very difficult to do with our short season).



Isolation with physical barriers. Depending on their pollination requirements, you can cover your plants with Remy, paper or cloth bags, cages, or hoop houses. Barriers like thick vegetation, buildings and hills can also aid in blocking pollen from reaching your plants.



# POPULATION & ROGUEING

Population size of your seed crop is important for maintaining genetic variability. Save seed from enough plants to ensure adaptability and to avoid inbreeding depression. Outbreeding plants need higher population sizes to avoid inbreeding depression. There are recommended population sizes for all vegetable crops. *Refer to Self and Cross Pollinating Spectrum.*

Consider your population size and the losses that may occur due to environmental conditions. You will also want to plant enough to allow you to select seed from only the best plants.

Rogueing is when you remove off-types (not true to the characteristics of the variety) and plants which aren't performing very well. Do not save seed from weak or diseased plants. Without rogueing plant quality will deteriorate over time.





# SOIL CULTIVATION NEEDS FOR SEED CROPS

The needs of your seed crops are very similar to the rest of your garden or fields. However, there are a few differences:



## Soil Preparation

Like all good gardens they need fertile, nutritionally balanced, good drainage and soil texture. Adequate Phosphorous is important for good flower and seed set. A balanced resource of Nitrogen is important for maintaining good growth, but not too much vegetative growth.



## Spacing

Plants such as broccoli, spinach, carrots and beets all require more space to reach full maturity.



## Trellising and Staking

Plants reaching full maturity get bigger and heavier. It's important to provide support to prevent them from falling over. This prevents disease, encourages drying and allows for easier weeding.



## Disease and Pest Management

There are many seed borne diseases. Monitor your plants, if you suspect something make sure to research



## Weed Management

Seed crops are in the ground a lot longer than vegetable crops so they require a little more maintenance over time. Keeping up with weeds will improve seed yields, decrease disease and stop weed seeds from getting mixed in with your crops.

# HARVESTING & PROCESSING

Wet-seeded crops are seeds that are embedded in wet flesh inside fruits. Examples: Tomatoes, squash, peppers, eggplant, zucchini, cucumber, etc. These seed crops need to mature on the vine as long as possible. Usually, long past what we would consider edible.

Processing wet seed involves one or more of the following methods:

## Soaking

Clean seed by soaking in water until the pulp and residue doesn't cling to the seed. Don't soak for longer than 8- 12 hours.

## Fermentation

Recommended only for tomato and cucumber seeds. It removes the germination inhibiting gel found on these seeds. It also destroys some diseases. First, scoop out seeds and pulp, put it in a jar with a lid and add water to seed and pulp - just enough to be able to stir it. Put it in warm location (22-33°C) and stir it a few times a day. When you see white mold develop on the top it has finished, this usually takes 2-3 days. If you see sprouting it has been in too long and the seed cannot be saved. Finally, decant and rinse a few times.

## Rinsing

Separates the pulp from the seed by rinsing under running water and rubbing seeds and pulp onto a screen/sieve. It's a good idea to decant after this method to get rid of any non-viable seed (seed that floats in water).

## Decanting

This process allows you to separate the lighter, floating seed from the good, heavy seed. Once you've separated the pulp from the seed, get a large container and simply add 4 parts water to every 1 part seeds. Wait a few minutes for the heavy seed to sink and remove floating seeds and debris off the top. Repeat a few times until the water is clear.

# HARVESTING & PROCESSING

Dry-seeded crops are any seeds contained in a dry fruit and need to dry out to reach full maturity. Examples: Peas, carrots, brassicas and many others. You can determine these seeds are ready for harvest by the color of the seed or pod, the dryness of seed or pod and the ease of detachment from the stalk. For many crops this can require multiple harvests of seed. Adverse wet weather and seed-eating animals can sometimes force you to harvest earlier and dry plants indoors.

The steps of processing and cleaning dry-seeded crops at a small-scale are:

1

## Threshing

Loosens and removes seeds from stalk and pods. You can try rubbing them with your hands or stomping/dancing on them.

2

## Cleaning

Removes plant debris and chaff from threshing. This is done by a combination of winnowing (separation based weight using wind) and screening (separation based on size).



# SEED STORAGE

To prolong the life of seed, we want to slow down its use of food reserves by keeping it dry and cool. Dry and cool will also keep seed protected from bacteria, fungi and insects. If you have to choose between a dry place and cool place, choose a dry-warm location over a wet, cool location. In the house and fridge are good for short-term, but the freezer is better for long term. Freezer storage requires air-tight containers and seeds must be very dry.

Before storing, make sure seed is VERY DRY. If possible, test seeds by seeing if they crack when they bend. Give seeds plenty of time to dry (4 weeks) before storing them in air-tight containers.

Depending on the species and conditions, seed can usually be stored for 3-5 years and maintain good germination and vigor. The exception is short-lived seeds (1-2 years): onions, leeks and parsnips.

Lastly, label your seeds. The name, it's original seed source, the year and other comments about the conditions they were grown in so you don't forget.





# FINAL TIPS

## For Beginners

- Begin with peas, lettuce, and tomato
- As you get familiar, experiment

## Planning

- Make a garden plan
- Try growing a couple of seed crops per year
- Change up your seed crops year to year

## Working with Others

- Work with friends and the community to grow multiple seed crops of the same species without having to worry about isolation distances
- Share your seed and participate in seed swaps

## Starting Seed

- Get seeds started as early in the spring as your weather allows
- Ensure they mature and dry down as early as possible





## Get in touch!

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