



# Seed Saving

**A seed savers guide  
for home food growers  
in Darebin**



## Acknowledgement of country

We acknowledge the Wurundjeri Woi-wurrung people of the Kulin nation as the Traditional Custodians of the land on which we now call Darebin. We recognise their continuing connection to land, water, food and culture and pay respects to Elders past, present and emerging.



## Introduction to seed saving

Seed saving is the practice of growing a plant to maturity and harvesting the seeds to re-plant the following season. By saving seeds you are connecting to an ancient tradition that is essential for resilient food systems and preserving biodiversity. When you save seeds from your tastiest, best performing and most pest-resistant plants, you'll grow strong plants that are both delicious and uniquely adapted to your local conditions. You can also save money and have an abundance to share with family, friends and neighbours.

## Preserving seed diversity

We're at risk of losing thousands of open-pollinated heirloom varieties because they're not commercially valuable. Yet it's from this vast agricultural biodiversity that we will find resilient seed varieties to adapt to a changing climate. The more variety of plants we grow, the less vulnerable we are to pests, diseases and extreme weather events.

*Will you be a seed steward? Choose an heirloom variety that you love, save seed every year and share it freely through a seed library. Standing by one seed each is all it will take to protect our seed heritage for the next generation.*



## Seed terminology

**Hybrid seeds** are a cross between two varieties of the same species with the plants displaying characteristics from each. Hybridisation can be done by hand or may take place naturally in your garden when pollen is carried by wind or insects. Commercial hybrid seeds (labeled F1) have been bred for desirable traits like strong vigour, increased yields or disease resistance, as well as commercial advantages like uniformity, shipping and shelf life. Hybrids are genetically unstable so seed saved from these plants will not produce plants that look and taste like the parent.

**Open-pollinated seeds** are genetically stable so seed saved will produce 'true to type' future generations that look and taste like the parent as long as pollination is controlled to prevent accidental hybridisation. Greater genetic diversity of open-pollinated seeds allows them to adapt more readily to changing conditions. *Open-pollinated plants are therefore the best choice for most seed savers.* Both self and cross-pollinating plants can have open-pollinated seeds (see page 3).

**Genetically modified seeds** have genes from another plant or animal species inserted by scientists, and are not usually available to home gardeners.

**Heirloom seeds** are old, locally valuable open-pollinated plant varieties that have been passed down between generations of gardeners and farmers. While all heirloom seeds will be open-pollinated, not all open-pollinated seeds are heirloom seeds.

**Organic seeds** are seeds grown without the use of chemicals. **Certified organic seeds** have been grown in accordance with standards that protect soil health, and prohibit the use of synthetic chemicals, fertilisers, pesticides or herbicides.



## Pollination



Pollination occurs when pollen from the male parts of a flower (the **stamens**) is deposited on the female part (the **pistil**) of a flower. A single flower can have both male and female parts, but some species have separate male and female flowers on the same plant (eg. pumpkin) and some species have separate male and female plants (eg. asparagus, spinach) so you'll need at least one of each sex to set seed.

## The pollination spectrum



Plants vary in their pollination preferences.

**Self-pollinating plants** require pollen to be moved from the male to the female parts of the flower *on the same plant*. In some flowers the male and female parts are so close that only the slightest movement is needed to transfer the pollen and this might happen before the flower even opens! Cross-pollination is still possible, especially in gardens under organic management with many insects. These '**inbreeding**' plants can maintain their gene pool with a very small number of individuals.

**Cross-pollinating plants** require wind or insects to transfer pollen *between plants*. These '**outbreeding**' species must cross with plants of the same species to maintain their genetic diversity and vigour over time. Seeds saved from a small number of plants will eventually become weak or lose characteristics. These plants are more susceptible to accidental hybridization if pollination is not controlled.

## How do I maintain seed purity?

Controlling pollination is optional, especially for strongly inbreeding species like tomatoes and common beans. You may not mind if your Jap and Butternut pumpkins cross to create Jutternuts next year! In fact, many treasured open-pollinated heirlooms originated as accidental hybrids that were allowed to grow and adapt to changing conditions. But if you want to guarantee that the next generation of plants will look and taste like their parents, you can control pollination to maintain seed purity.

All plants of the same species can cross pollinate (eg. the species *Lactuca sativa* includes all types of lettuce), so this means only allowing plants of the same *variety* (eg. 'Red Oakleaf' lettuce) to flower and cross-pollinate.

*Remember that pollen from wild weedy relatives or a neighbour's garden can be carried by wind or insects! In the home garden you can tape, bag or cage flowers to ensure purity, pollinating by hand with a paintbrush where necessary to ensure adequate cross-pollination.*



## Selecting plants for seed

**Keep the best and eat the rest!** The decisions you make about which plants to save seed from are influencing the next generation – for better or for worse – so don't be tempted to gather seed from weak or diseased plants. You might decide to focus on plants that are early ripening or drought resistant. Or perhaps you'll select for higher yields or a delicious flavour. Whatever your priorities, only save seed from your best plants. *A word of warning – mark plants or fruit for seed saving with tape or ribbons so they are not accidentally harvested for the kitchen!*

**It's very important that seed is fully mature before harvest** so that it has gained maximum strength from the parent plant. Sometimes this is well beyond the stage that we normally harvest vegetables for the kitchen, so let those tomatoes soften, let your silverbeet reach for the sky and yes, you'll have to let those zucchinis explode into giant beige marrows. Yellowing stems are a clear sign that the parent plant is dying and seeds have reached maturity.

**Know when to harvest.** In many species you can monitor seed development by gently squeezing pods or seed heads between your finger and thumb, and with trial and error you'll learn how early you can harvest them if pests and weather (or your impatience to clear a garden bed) are an issue. Some plants ripen seed progressively, so you'll need to make a call when say two-thirds are ready, or make several harvests.



## Seed cleaning techniques

The other bits of plant that are gathered along with seeds – the stems, leaves and pods – are known as 'chaff'. It's a good idea to clean seeds before storage, since it can harbour pests and diseases and takes up space in your seed box. There are two basic methods for cleaning seeds:

### 1. Wet cleaning

Wet cleaning is used for seeds encased in moist flesh (eg. pumpkin). Scoop seeds into a bowl of water, rub between your fingers and pick out any large chunks of flesh. Pour into a sieve, rub the seeds gently against the sieve to clean off pulp and rinse under running water. Repeat if necessary. Spread them out on the sieve and leave to dry in a shaded place with good airflow, stirring daily to break up clumps and encourage fast and even drying.

**Fermentation:** Some seeds are surrounded by a gel (eg. tomato and cucumber) that can be removed easily using fermentation. This treatment may also destroy some seed-borne diseases. Scoop the seeds into a small container with a little water to cover if needed, and leave them for 2-3 days until bubbles or surface mould appear, then proceed with basic wet cleaning.



## 2. Dry cleaning

Dry cleaning is used for all other plants (eg. capsicums, basil, most flowers). Seeds can be left to dry on the plant, but if rain or pests are an issue, as long as the seeds are fully mature the pods or the seed head can be cut and either hung or spread in baskets in a warm, shaded, airy space.

When the pods or seed heads are dry enough to shatter, thresh them by stripping or crushing into a bowl and rubbing between your fingers to release the seeds. They can then be sieved or winnowed to remove the chaff.

**Sieving** is as simple as it sounds. Experiment with your kitchen sieve and colander or mesh like insect screens. Look for other gauges in op-shops to deal with seeds of different sizes.

**Winnowing** uses breath or a gentle breeze to separate chaff from seed. It works for seed that is heavier than its chaff. Shake the bowl to bring chaff to the surface, pick out large pieces by hand, then tilt slightly away from you and blow in a U shape around the seed to push the chaff up and over the edge of the bowl. Don't worry if you lose a little seed too - this is the lightest and therefore weakest. Alternatively, you can pour the seed slowly from one bowl to another, with a gentle breeze (or a small fan) carrying away the chaff.

## Drying and storing your seeds

Seeds must be dried before storage or they'll be destroyed by mould or premature sprouting (or both!). They should never be heated above 35C though, so don't put them in direct sun or near a heat source. A few weeks indoors at room temperature is usually sufficient. Shallow baskets are ideal for air circulation, and occasional stirring will help them dry evenly.

Dry seeds can be packaged in glass jars, paper bags and envelopes or reused plastic bags. Label your seeds with the variety and date (month/year) collected so you know what they are when it comes time for planting. Store in a tightly sealed box that is rodent, weevil and moth proof.

Most vegetable seeds will remain viable for 3-5 years if they are kept cool, dark and dry. Don't be tempted to store them in your greenhouse, garage or garden shed where fluctuating temperature and humidity will reduce their lifespan. Seeds make a beautiful display, but the best place for long term storage is somewhere considerably less glamorous - under your bed perhaps, or in a cupboard on the south side of your house?

## Sharing your seeds

If you've followed this guide, you'll probably have more seed than you could ever dream of planting, so do make a plan for your surplus. Will you gift it to family, friends and neighbours, or take it to a local food swap? Will you share it through a seed library, or join (or even create!) a local seed savers network?

Whatever your choice, enjoy the small miracle of growing, saving and sharing your seeds and thanks for doing your bit to preserve our precious seed heritage.



# Seed Saving by Plant Family

Rating: EASY

## **Solanaceae (aka solanums)**

**Eg. tomatoes, capsicums, chillis, eggplant, tomatillo, cape gooseberry**

Most tomatoes are self-pollinating and inbreeding. Flowers can be bagged to ensure purity, but pollination control is generally not required for home gardeners. Tomato seed is ready to harvest when a fruit starts to soften. Tomato pulp is usually fermented before wet cleaning (see page 7). A simpler method for home gardeners is to spread pulp onto paper towel and leave to dry. At planting time there is no need to remove the paper as it will biodegrade, so just tear off the required seeds and plant.

Capsicum and chilli are both self- and insect pollinated. Eggplants are insect pollinated and partly outbreeding.

Seed maturity is usually indicated by colour change (eg. green to red chillis) and wrinkles on the fruit. Eggplant, capsicum and chilli seeds can usually be scraped out and dried with no further cleaning required. Potatoes are in the Solanaceae family but are propagated vegetatively.

**Seed viability: capsicum 3 years, tomatoes 3-10 years depending on variety, eggplant 7 years**



## **Fabaceae (bean family aka legumes)**

**Eg. beans, broad beans, peas, snow peas**

Common beans and peas are self-pollinating and inbreeding, and pollination control is generally not required for home gardeners. Some bean species are insect pollinated with some outbreeding. Broad beans can cross-pollinate with other varieties, so only save these seeds if you are growing just one variety.

Beans and peas are ready to collect when the pods turn leathery or crisp to the touch. Pods should be opened once harvested to encourage drying or seeds may prematurely sprout or become mouldy. If shelled by hand, they usually require no further cleaning. Discard small, misshapen or damaged seeds.

When very dry, freeze seeds in a tightly sealed container for 3 days to destroy weevil eggs, ensuring the container returns to room temperature before opening to avoid moisture condensing on seeds.

**Seed viability: beans and peas 3-4 years, broad beans 6 years**

## **Aizoaceae**

**Eg. warrigal greens**

Warrigal greens seed forms along the vine, with seed ripening progressively from green to dark brown. Seeds easily detach from the vine and are hard to find on the ground when fully mature, so can be picked green when they have reached full size and dried.

**Seed viability: 5 years**



Rating: MODERATE

### **Amaranthaceae**

**Eg. silverbeet, chard, beetroot, spinach, amaranth, quinoa**

This family is wind pollinated and outbreeding. Some plants in this family including beetroot, silverbeet and chard are biennial, so plants must be overwintered before they will flower and set seed. Beetroot, silverbeet and chard are all part of the *Beta vulgaris* species and may hybridise if pollination is not controlled. Use dry cleaning methods.

**Seed viability:** beetroot, silverbeet and chard 6 years, spinach 5 years



### **Apiaceae (aka umbells)**

**Eg. carrot, parsnip, parsley, fennel, dill, coriander, celery**

This family is insect pollinated and outbreeding. Dill and coriander are annuals that will grow and set seed in the same year. Many plants in this family including carrot, parsnip, parsley and celery are biennial, so plants must be overwintered before they will flower and set seed. Carrots and their wild weedy relative Queen Anne's Lace are both *Daucus carota* species, and may hybridise if pollination is not controlled. Use dry cleaning methods.

**Seed viability:** carrots and parsley 3 years, dill 5 years, celery 8 years



### **Amaryllidaceae (aka alliums)**

**Eg. onion, spring onions, leek, chives**

This family is insect pollinated and partly outbreeding. Onions and leeks are biennial, so plants must be overwintered before they will flower and set seed. Use dry cleaning methods. Garlic and perennial onion varieties are in this family but are propagated vegetatively.

**Seed viability:** leek 3 years, onion 2 years



### **Asteraceae (aka daisies)**

**Eg. lettuce, chicory, endive, sunflower, calendula, marigold, murnong/yam daisy**

This family is mostly self-pollinated so pollination control is usually not required for home gardeners. Use dry cleaning methods. Jerusalem and globe artichokes are in the Asteraceae family but are propagated vegetatively. Collect murnong seeds in late spring or early summer when seed heads are fluffy and white, and store in fridge. Alternatively allow the main tuber from your crop to keep growing in the ground.

**Seed viability:** lettuce 3 years, endive and chicory 8 years, sunflower 7 years, murnong 6 months

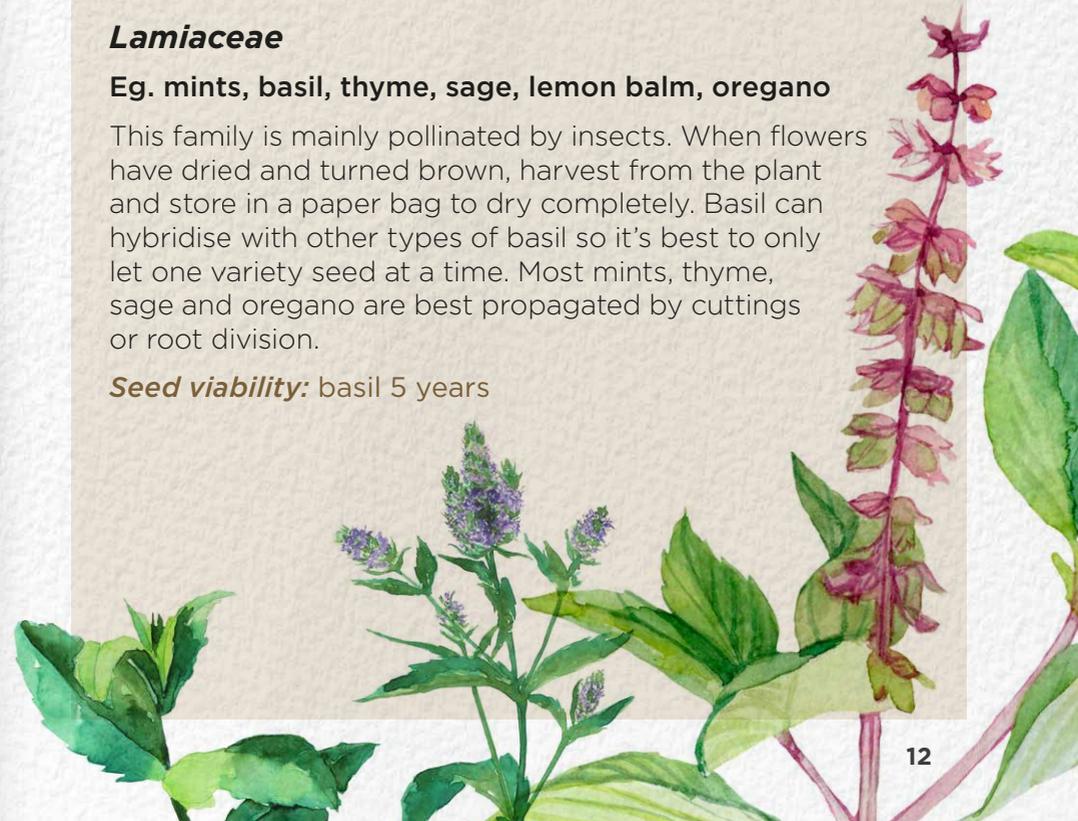


### **Lamiaceae**

**Eg. mints, basil, thyme, sage, lemon balm, oregano**

This family is mainly pollinated by insects. When flowers have dried and turned brown, harvest from the plant and store in a paper bag to dry completely. Basil can hybridise with other types of basil so it's best to only let one variety seed at a time. Most mints, thyme, sage and oregano are best propagated by cuttings or root division.

**Seed viability:** basil 5 years



**Rating: ADVANCED**

### **Poaceae (aka grasses)**

**Eg. corn, maize, native edible grasses**

This family is wind pollinated and strongly outbreeding, requiring a large number of individuals flowering together to maintain genetic diversity and vigour. Corn should be planted in large blocks (not narrow rows) to ensure good seed set. Kernels can be removed from the cobs when very dry.

**Seed viability:** sweet corn 3 years

### **Brassicaceae (aka brassicas)**

**Eg. broccoli, kale, cabbage, cauliflower, brussels sprouts, radish, mustard, kohlrabi, turnip, bok choy, pak choy, tatsoi, rocket**

This family is insect pollinated and strongly outbreeding, requiring a large number of individuals flowering together to maintain genetic diversity and vigour. The species *Brassica oleracea* includes broccoli, cabbage, most kales, Brussels sprouts, kohlrabi, collards, cauliflower and many wild weedy relatives, so all these plants can hybridise if pollination is not controlled! Use dry cleaning methods.

**Seed viability:** cabbage, kale and collards 4 years, bok choy, pak choy, tatsoi, mustard, turnip, radish, broccoli and cauliflower 5 years



### **Cucurbitaceae (aka cucurbits)**

**Eg. pumpkin, cucumber, zucchini, squash, gourd, cantaloupe, watermelon, choko**

This family are mostly annuals that are insect pollinated and partly outbreeding. Cucurbits have separate male and female flowers on each vine. Male flowers have a long, narrow stem, while female flowers have an immature fruit at the base of each flower.

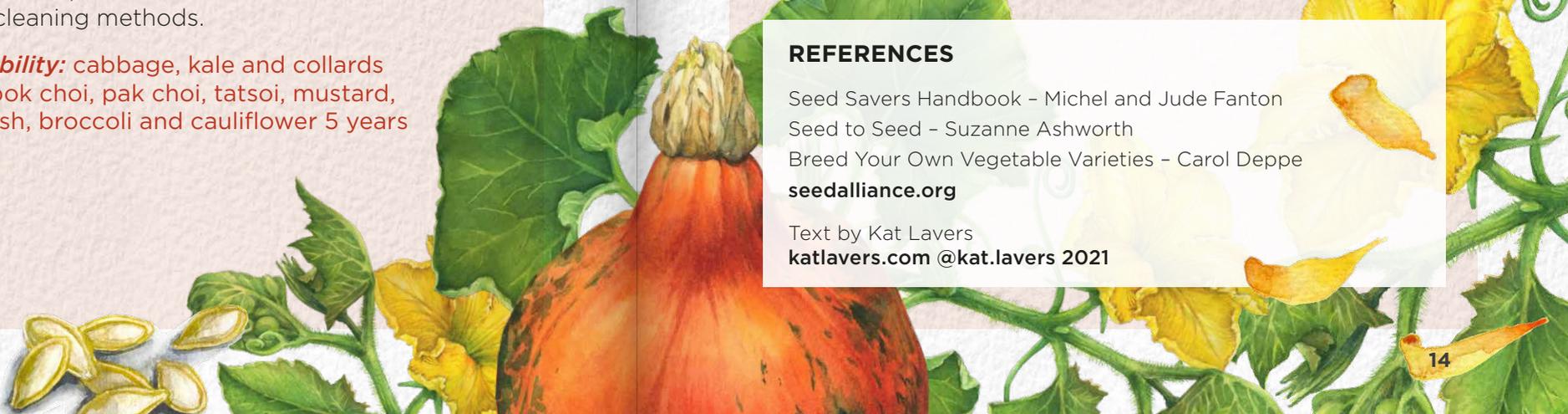
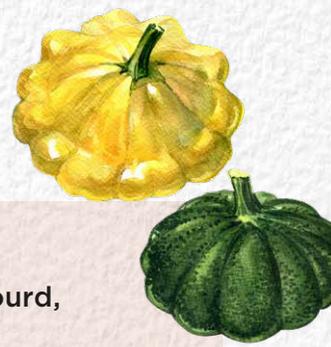
Cross pollination can occur between varieties within a species, which can be avoided by hand pollinating or planting cultivars that are less likely to cross with each other. Many vegetables in this family are picked immature for the kitchen (eg. cucumber, zucchini) and must be fully mature before harvest for seed, usually indicated by a colour change. Seed will continue to increase in strength and size for 20 days after mature fruit is picked. Use wet cleaning method. Cucumber seeds may be fermented for 2-3 days before cleaning. The seed of chokos are cannot be removed from the fruit. When the fruit begins to shoot, it is planted half-submerged with the shoots just above ground level.

**Seed viability:** pumpkin and zucchini 6 years, cucumber 10 years, watermelon 6 years, melon 5 years

### **REFERENCES**

Seed Savers Handbook - Michel and Jude Fanton  
Seed to Seed - Suzanne Ashworth  
Breed Your Own Vegetable Varieties - Carol Deppe  
[seedalliance.org](http://seedalliance.org)

Text by Kat Lavers  
[@kat.lavers 2021](http://katlavers.com)





Seed saving has an ancient history of culture, tradition and plant science. You can continue in this tradition by saving seeds from your garden to sow in years to come. By saving and sharing seeds you can help increase seed diversity, preserve old heirloom varieties, develop seed that is locally adapted to our local conditions and strengthen our community's resilience to climate change.

For more information and resources about sustainable gardening, visit **[darebin.vic.gov.au/gardening](http://darebin.vic.gov.au/gardening)**

For more information about Darebin's Seed Libraries, visit **[darebinfoodharvestnetwork.org.au](http://darebinfoodharvestnetwork.org.au)**



## CITY OF DAREBIN

274 Gower Street, Preston  
PO Box 91, Preston, Vic 3072  
T 8470 8888 F 8470 8877  
E [mailbox@darebin.vic.gov.au](mailto:mailbox@darebin.vic.gov.au)  
[darebin.vic.gov.au](http://darebin.vic.gov.au)

 **National Relay Service**  
[relayservice.gov.au](http://relayservice.gov.au)

If you are deaf, or have a hearing or speech impairment, contact us through the National Relay Service.

 **Speak your language**  
T 8470 8470

العربية	Italiano	Soomalii
繁體中文	Македонски	Español
Ελληνικά	नेपाली	اردو
हिंदी	ਪੰਜਾਬੀ	Tiếng Việt