

# Harvesting and Saving Garden Seeds

by Robert E. Gough, Professor of Horticulture, and Cheryl Moore-Gough,  
Extension Horticulture Specialist, retired

**This publication explains what you need to know to begin harvesting and saving garden seeds. It defines the term *cultivar*, and explains the distinctions between hybrids, open-pollinated, cross-pollinated and self-pollinated cultivars. It gives basic instructions on how to save and preserve viable seed for different types of plants and contains a table of average storage times.**



**MontGuide**

MT199905AG Reviewed 10/13

**MODERN PLANT BREEDERS HAVE COME A LONG** way toward developing vegetable cultivars of the highest quality. In many cases, yields and pest resistance of these new cultivars far exceed those popular just a few years ago.

Until the end of World War II most gardeners saved their own seeds in an effort to cut costs and/or because high quality seeds were not always readily available at a reasonable price. That's all changed. Now inexpensive, high quality seed is available and we generally recommend that you purchase fresh seed from a reliable, preferably local, company rather than attempt to save your own seeds from year to year.

However, there is a small but growing group of hobby gardeners that prefer to save their own seeds. By doing this they not only save a very small sum of money but also can attempt to do their own amateur plant breeding and selection of what they consider to be superior cultivars. One caveat: be advised that saving seeds of some patented cultivars may be illegal.

Saving your own vegetable seed is fun but takes time and must be done right. Harvest seeds only from the best cultivars that produce the most vigorous plants and the finest crops. With carrots and parsnips, select the plants that produce small-cored roots with little zoning. (Zoning is the bicolor banding you see in a cross-section of the roots.)

Here are a few rules and definitions to keep in mind when saving your seeds.

## Hybrids

Many cultivars available from seed companies today are F<sub>1</sub> hybrids (that is, the first generation of a cross between two inbred lines). There are hybrids of cross-pollinated as

well as of self-pollinated crops. These produce vigorous, high yielding, pest-resistant plants with high-quality flowers, fruits or roots. The seeds you purchase and plant will produce plants true to type, but their offspring won't. Seeds saved from an F<sub>1</sub> hybrid plant will be the next (F<sub>2</sub>) generation and will very likely produce plants inferior to the parent. Do not waste your time saving the seeds from hybrid cultivars.

## Open-pollinated cultivars

This refers to cross-pollinated cultivars that are not hybrids. They will produce plants reasonably true to type if planted in isolation. Most older cultivars of vegetables, such as the 'Straight 8' cucumber and the 'Sparkler' radish, are open-pollinated.

**Cultivar:** A horticultural race or variety of a plant that has originated and persisted only under cultivation.

– *American Heritage Dictionary*, Third Edition

## Cross-pollinated cultivars

Cross-pollinated cultivars are those that are pollinated by other cultivars of the same kind of plant. For example, seeds of 'Long Standing

Bloomsdale' spinach are produced in fields planted only to that cultivar and isolated from other spinach cultivars. The traits passed on to the seeds will be within the acceptable known characteristics of the cultivar.

If you plant only 'Long Standing Bloomsdale' spinach, the traits will be passed on to succeeding generations and you will be reasonably sure of getting a 'Long Standing Bloomsdale' type plant from year to year. However, if you plant different cultivars of spinach – for example, 'Long Standing Bloomsdale' and 'Melody' – in your garden in the same year, they will cross-pollinate. The seeds from this cross-pollination will carry a combination of traits from the two cultivars. So, you can save seeds from open-pollinated cultivars and be reasonably sure of getting

**TABLE 1. Some common vegetable crops that are naturally cross-pollinated**

Asparagus	Carrots	Cress	Okra	Radish
Beets	Cauliflower	Endive	Onion	Rhubarb
Broccoli	Chard	Leek	Parsley	Rutabaga
Cabbage	Corn	N.Z. Spinach	Parsnip	Spinach

satisfactory results **IF** you isolate the plants from other cultivars of the same type of vegetable.

Plants listed in Table 1 are naturally cross-pollinated. For home garden production, separate these plants from others of the same kind by at least 200 yards to reduce the chances of crossing among cultivars. As a group, most crucifers – also known as cole crops, or brassicas – cross readily, so isolate them from each other by at least 200 yards if you want to save their seed. For example, broccoli will readily cross with kohlrabi, cabbage with cauliflower, etc.

Beets, chard, corn and spinach are cross-pollinated by wind (wind-pollinated). Separate these plants by at least one mile from other cultivars of the same kind. Always isolate super sweet corn varieties. If they cross with any other types of corn, the resulting corn will be tough and starchy.

The better seed companies indicate in their catalogs whether a cross-pollinated cultivar is open-pollinated or a hybrid. Once again, do not attempt to save the seeds of hybrid cultivars.

### Partially cross-pollinated cultivars

Eggplant, pepper, celery and the cucurbits (vine crops – squashes, pumpkins, muskmelons, cucumbers and watermelons) are partially cross-pollinated, with the amount of cross-pollination dependent upon the

environment. However, as with open-pollinated cultivars, there are hybrid cultivars available within this group. If you plan to save the seeds, plant a nonhybrid in isolation to be sure you get seeds that will produce plants that are true to type.

Cucurbits belonging to certain species will also cross-pollinate (Table 2) and must be isolated from each other to remain reasonably true to type.

### Self-pollinated cultivars

Peas, beans, lettuce and tomatoes are self-pollinated. You can be fairly sure of getting plants true to type from seeds saved from an earlier generation, provided you do not start with hybrid seeds. You can plant several cultivars together and not have to worry about isolation to retain purity.

### Biennials

Saving seeds from annuals is easy, but the seeds of biennials are borne in the second season following a cold period (Table 3). Therefore, you will have to allow the plants to over-winter and collect seeds from the flowering structures the following year. Root crops present a special problem since they must be harvested to judge their quality. Carefully dig them in the fall and select those with the best characteristics (largest root, minimal zoning, etc.). Remove their tops and replant them right away just

**TABLE 2. Some commonly grown cucurbits (vine crops), their species and common cultivars.**

Any two cultivars within the same species will freely cross. Cultivars within species with the same subscript will also cross. For example, *C. pepo* will cross with *C. moschata* and *C. mixta*, while *C. maxima* will cross only with *C. moschata*. Other crosses between species (for example, *C. melo* and *C. sativus*) will not occur, nor will crosses among genera.

Species:	<i>Cucurbita pepo</i> <sub>z</sub>	<i>Cucurbita moschata</i> <sub>yz</sub>	<i>Cucurbita maxima</i> <sub>y</sub>	<i>Cucurbita mixta</i> <sub>z</sub>	<i>Cucumis melo</i>	<i>Cucumis sativus</i>	<i>Citrullus lanatus</i>
Cultivars:	Jack O'Lantern pumpkin Conn. field pumpkin Acorn squash Spaghetti squash Zucchini Yellow crookneck Yellow straight-neck Bush scallop	Butternut squash Dickinson pumpkin Kentucky field pumpkin Golden cushaw pumpkin	Buttercup squash Hubbard squash Turks turban squash Big Max pumpkin King of mammoths pumpkin	Green striped cushaw pumpkin White cushaw pumpkin	Netted muskmelons Honeydew melons Casaba melons Crenshaw melons Snake melon	Cucumber	Watermelon

**TABLE 3. The following plants are biennials and normally will produce seeds in their second season**

Beets	Cabbage	Carrots
Cauliflower	Celery	Chard
Chicory <sup>1</sup>	Collards	Endive <sup>1</sup>
Kale	Leeks	Onions
Parsnips	Parsley	Rutabaga

<sup>1</sup>Late Cultivars

as they were growing previously. The following spring they will produce new tops and a flower stalk from which seeds can be harvested.

***Saving seeds borne in a pod-like structure (beans, peas, crucifers, etc.)***

- Allow the pods to turn brown, then harvest the pods, dry them for one to two weeks in a warm, dry area and shell.
- Store the seeds in a paper bag in a cool (below 50°F), dry place.
- The seeds of crucifers can carry diseases that will infect your garden. After harvest, soak seeds of cabbage in 122°F water for 25 minutes. Soak the seeds of broccoli, Brussels sprouts and cauliflower at the same temperature for 18 minutes. Pay attention to the time and temperature.
- After soaking, dry and store the seeds in paper envelopes in a cool, dry place.

***Saving seeds borne in a flowerhead (lettuce, endive, dill, etc.)***

- Cut off the seed stalks just before all the seeds are dried; the seeds may fall off the stalk and be lost if you allow them to fully dry on the plant.
- Dry the harvested seed stalk, shake or rub the seeds off and store them in a paper envelope in a cool, dry place. If you notice the seeds fall off the stalks as they dry (shattering), place the entire stalk upside down in a paper bag or cover the seed heads with a nylon stocking to catch the seeds.

***Saving seeds borne in fleshy fruit (tomato, cucumber, etc.)***

- Pick fully ripe fruit of cucumber and tomato and squeeze the pulp, including the seeds, into a glass or plastic container.
- Add a little water and let the mixture ferment several days at room temperature, stirring occasionally. Sound, viable seeds will settle out; nonviable seeds will float.

- Pour off the pulp, nonviable seeds and water and spread the viable seeds in a single layer on a paper towel to dry.
- Store them in a paper envelope in a cool, dry place.
- Scrape out the seeds of peppers, melons, pumpkins and squash and spread them onto a paper towel to dry. Then store them in a paper envelope as you would other seeds.

***Saving herb seeds***

Herbs vary in the way their seeds are produced. In general, allow herb seeds to remain on the plants until nearly dry. Some seed heads, like those of dill, shatter as soon as they are dry. Watch the early-ripening seeds; if they drop, harvest the other seed heads before they get to that point, leaving several inches of stem attached.

Tie several stems together and hang them upside-down, covered with a paper bag to catch falling seed, in a warm, dry place until completely dried. Remove seeds from the heads and store them in a paper envelope in a cool, dry place. Herb seeds for flavoring, such as dill, anise and cumin, are used when dry.

Mark storage containers clearly with permanent ink, indicating the cultivar of seed and date saved. Most seeds remain viable for years if properly stored in paper envelopes in a cool place (Table 4).

Test germination in February by the traditional “rag-doll” test. Count out 100 small seeds or 25 large seeds and wrap them in moistened paper toweling. Squeeze out the extra water and place the “rag-doll” in a glass jar with the cover loosely fastened. Place the jar on a sunny window sill. Unroll the paper after a week and figure the germination; if germination is below 50 percent, either discard the seed or double the planting concentration to give the desired number of plants.

**TABLE 4. Average number of years seeds may retain good viability when properly stored**

Vegetable	Years	Vegetable	Years
Asparagus	3	Lettuce	5
Bean	3	Muskmelon	5
Beet	4	Mustard	4
Broccoli	5	Onion	1
Brussels sprouts	5	Parsley	2
Cabbage	5	Parsnip	1
Carrot	3	Pea	3
Cauliflower	5	Pepper	4
Celery	5	Pumpkin	4
Chinese cabbage	5	Radish	5
Collard	5	Rutabaga	5
Cucumber	5	Spinach	5
Eggplant	5	Squash	5
Endive	5	Sweet corn	1
Kale	5	Tomato	4
Kohlrabi	5	Turnip	5
Leek	1	Watermelon	5



To order additional publications, please contact your county or reservation MSU Extension office, visit our online catalog at [www.msuextension.org/store](http://www.msuextension.org/store) or e-mail [orderpubs@montana.edu](mailto:orderpubs@montana.edu)

Copyright © 2013 MSU Extension

We encourage the use of this document for nonprofit educational purposes. This document may be reprinted for nonprofit educational purposes if no endorsement of a commercial product, service or company is stated or implied, and if appropriate credit is given to the author and MSU Extension. To use these documents in electronic formats, permission must be sought from the Extension Communications Coordinator, 135 Culbertson Hall, Montana State University, Bozeman, MT 59717; E-mail: [publications@montana.edu](mailto:publications@montana.edu)

The U.S. Department of Agriculture (USDA), Montana State University and Montana State University Extension prohibit discrimination in all of their programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital and family status. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jill Martz, Director of Extension, Montana State University, Bozeman, MT 59717.