

## Vegetable Garden Seed Storage and Germination Requirements

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Leftover vegetable seeds can be used next year if stored properly. This publication covers how to select and store seed, and conduct germination tests.

A successful garden begins with selecting and using high quality seed of superior varieties adapted to Nebraska's growing conditions (*Figure 1*). Start by purchasing seed from a reputable seed company. Save records of seed orders so you can contact the seed company if you have a complaint. Saving the seed orders is also useful for keeping track of the varieties you planted.

### Storing Seed

Often seed is left over after planting and can be saved for next year's garden, usually with little loss in germination. Seed

stored for more than one year, however, will require additional care to ensure high germination for future use.

Storage temperature, relative humidity, and seed moisture are important factors when determining how long seed can be stored without loss of germination. Storage life also varies greatly with species (*Table I*). In general, longer seed storage life is obtained when seeds are kept dry and at low temperatures.

### Germination

It is a good practice to conduct a germination test for seed stored for more than one year (*Table II*). If germination is poor, discard and buy fresh seed. To test for germination, place a counted number of seeds (such as 25 or 50) between paper towels, strips of soft muslin, or blotting paper in a petri dish, baking dish, or similar container. Label each "lot" of seed

with the variety name. Moisten the seeds and cover the container to prevent the seeds from drying out. Maintain the container at a temperature of 70 to 75°F. Remove and count the seeds as they germinate. Make your final count at the end of two to three weeks, when all the seeds have had ample time to germinate. Compute the percentage of germination.

Seed lots with lowered germination may still be safe for planting if they are sown at higher rates than usually recommended. Also remember that weakly sprouting seeds have a higher mortality rate when planted in the soil.

Germination conditions should be optimum when the seed is planted outdoors in the garden or indoors for transplants. This will not only increase germination percentage for older seed but also will ensure high germination for fresh seed.

Prevent damping off diseases in the garden by treating seed before use to kill

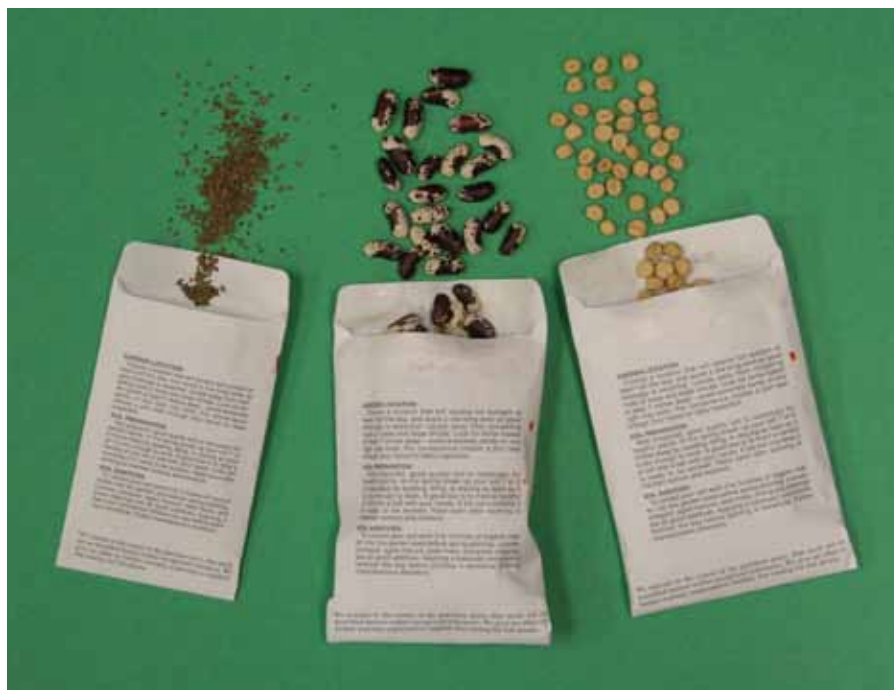


Figure 1. Choose high-quality seed adapted to Nebraska's growing conditions for your garden.

**Table I. Seed weight and longevity for home garden vegetables.**

<i>Crop</i>	<i>Seeds per Ounce<sup>a</sup></i>	<i>Seeds per Gram<sup>a</sup></i>	<i>Relative Longevity under Cool, Dry Condition (Years)<sup>ab</sup></i>
Asparagus	1,200	40	3
Bean, Lima	25-75	1-3	3
Bean, Snap	100-125	4	3
Beets	1,600	55	4
Broccoli	9,000	320	3
Brussels Sprouts	8,500	320	4
Cabbage	8,500	320	4
Carrot	23,000	820	3
Cauliflower	9,000	320	4
Celeriac	70,000	2,500	3
Celery	70,000	2,500	3
Chicory	26,000	900	4
Chinese Cabbage	18,000	650	3
Cucumber	1,100	40	5
Eggplant	6,000	200	4
Endive	26,000	900	5
Kale	9,000	320	4
Kohlrabi	9,000	320	3
Leek	11,000	400	6
Lettuce	25,000	900	5
Muskmelon	1,300	45	5
New Zealand Spinach	350	12	3
Okra	500	20	2
Onion	8,500	300	1
Parsley	18,500	660	1
Parsnip	12,000	430	1
Pea	90-175	3-6	3
Pepper	4,500	160	2
Pumpkin	100-300	4-11	4
Radish	2,500	90	5
Rutabaga	12,000	430	4
Salsify	1,900	70	1
Spinach	2,800	100	3
Squash	120-400	4-11	4
Sweet Corn	120-180	4-6	2
Swiss Chard	1,600	57	4
Tomato	700-1,200	250-430	3
Turnip	1,500	500	4
Watermelon	300-600	10-20	4

<sup>a</sup>Handbook for Vegetable Growers. 1988. Knott, Joe. John Wiley & Sons, Inc.

<sup>b</sup>Vegetable Growing Handbook. 1979. Splittstoesser, W.E. AVI Publishing, Inc.

**Table II. Germination data for home garden vegetable seed.**

Crop	Minimum Percent Germination <sup>abc</sup>	Germination Temperature <sup>bc</sup>						Days to Germinate Under Optimum Temperature and Moisture Conditions <sup>bcd</sup>
		Minimum		Optimum		Maximum		
		°F	°C	°F	°C	°F	°C	
Asparagus	60	50	10	75	24	95	35	10
Bean, Lima	70	60	16	85	30	85	30	7
Bean, Snap	70	60	16	80	27	95	35	6
Beets	65	40	4	85	30	95	35	5
Broccoli	75	40	4	85	30	95	35	5
Brussels Sprouts	70			80	27			5
Cabbage	75	40	4	85	30	95	35	4
Carrot	55	40	4	80	27	95	35	5
Cauliflower	75	40	4	80	27	95	35	5
Celeriac	55			70	21			11
Celery	55	40	4	70	21	85	30	7
Chicory	65			80	27			6
Chinese Cabbage	75			80	27			4
Cucumber	80	60	16	95	35	105	41	2-5
Eggplant	60	60	16	85	30	95	35	6-8
Endive	70	32	0	75	24	75	24	6
Kale	75			80	27			4
Kohlrabi	75			80	27			4
Leek	60			70	21			7
Lettuce	80	35	2	75	24	75	24	2-3
Muskmelon	75	65	18	95	35	105	41	3-4
New Zealand Spinach	40			70	21			6
Okra	50	60	16	95	35	105	41	6
Onion	70	32	0	80	27	95	35	4-5
Parsley	60	40	4	75	24	90	32	13
Parsnip	60	35	2	65	18	85	30	14
Pea	80	40	4	75	24	85	30	6
Pepper	55	60	16	85	30	95	35	8
Pumpkin	75	65	18	90	32	105	41	4
Radish	75	40	4	80	27	95	35	4
Rutabaga	75			80	27			4
Salsify	75			70	21			6
Spinach	60	32	0	70	21	75	24	5
Squash	75	65	18	95	35	105	41	4
Sweet Corn	75	50	10	85	30	105	41	3
Swiss Chard	65	40	4	85	30	95	35	4
Tomato	75	50	10	80	27	95	35	6
Turnip	80	40	4	80	27	105	41	3
Watermelon Seeded	70	70	21	95	35	105	41	4-5
Watermelon Seedless		85	30	95	35	105	41	5-6

Minimum percent germination to federal standards.

<sup>a</sup>Handbook for Vegetable Growers. 1988. Knott, J.E. John Wiley & Sons, Inc.

<sup>b</sup>Vegetable Growing Handbook. 1979. Splittstoesser, W.E. AVI Publishing, Inc.

<sup>c</sup>Seeds, The Yearbook of Agriculture. 1961. Stefferud, A., Editor. The United States Government Printing Office

fungal spores that may be on the seed surface. Create a bleach solution by mixing 1 part bleach into 9 parts water. Place the seeds in a fabric bag and dunk them into the liquid to thoroughly wet the seed surfaces. Remove them from the bleach solution and allow them to sit in the bag for 5 to 10 minutes, then rinse them thoroughly in water. Finally, remove the seeds from the bag, spread them out on a piece of paper and allow them to dry before planting.

*Table II* lists information about seed germination for common vegetables. This is a guide for comparisons when calculating germination percentages and when germinating seed for home garden use. Germination requirements will vary with seed source, seed storage conditions, age of seed, and the environmental conditions under which the seed is germinated. The minimum federal standards for vegetable seed germination also are included.

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