

Vegetable Seed Storage and Germination Testing

By: LabLover

Vegetable seeds are widely available and fairly inexpensive. Many gardeners wile away cold winter evenings pouring over myriad seed catalogs, searching for the perfect new addition to their spring garden. Purchasing the bulk of our seed every year is a recently new development in agriculture, whether large scale or the backyard type. For most of human history, the farmers and gardeners among us saved their own seed. Seed was also shared or bartered. Doing it right meant the difference between feast or famine for generations. It might mean the same again if seed catalogs or garden stores become unavailable.

Have you stored seed to plant a subsistence garden if the need arises? Perhaps you have several pounds of bean and corn seeds in garden center bags on a garage shelf. You feel more comfortable knowing that resource is there if needed. But, seeds are a perishable resource. Unless they are stored correctly, they will lose vigor quickly. Vigor is the ability to germinate rapidly with good disease resistance. Important in seeds you might one day depend on!

Without vigor, those stored seeds might let you down. The best way to ensure your stored seed remains reliable is to "rotate your preps" -buy new seed for storage every year and plant the ones left over from the year before. But if you don't grow a large garden every year, you could be wasting money and good seed by discarding it annually. Maximize your investment by storing your seed it under optimum conditions to maintain it longer. Check germination percentage to ensure your seed is reliable. A simple procedure done once each year will help you decide to plant or replace, saving you money and giving you peace of mind about your prep.

Seed Storage

High temperature and high humidity will degrade your seed quality quickly. Consider them the enemy! Fluctuating temperatures and humidity levels are just as damaging. Help defeat these problems by drying your seed well. Avoid direct sunlight- it can heat the seeds and damage them. Keep drying seeds below a temperature of 96 degrees F. A single layer of seed on a shaded screen with nearby circulating air is the best option. Don't attempt to dry them on cloth or non-rigid plastic, they can stick and be broken or damaged when removed. Treat them gently.

Use airtight containers to store dried seeds. Baby food jars or canning jars with rubber seals work well. You can cut gaskets from rubber inner tubes or similar material to fit larger jars for larger stocks. Vacuum sealers can also be used. Silica gel, if available, can be added to jar or bag. Store sealed bags in a jar or other rigid container. Jars prevent damage from insects or rodents, which is rather common in less secure storage. Jars and containers should be stored in a cool, dry place where the temperature fluctuates as little as possible. Root cellars are ideal. A basement corner far from open doors or windows is another option.

Seeds can also be frozen for longer storage. Seed moisture must be below 8% to avoid the internal moisture from swelling when frozen and damaging the seed. Test to see if moisture levels are low enough. As a general rule of thumb, dried seeds that break when folded, instead of bending, are 8% moisture or lower. Unless you plan to plant the entire contents of your entire storage jar, (never a good idea to plant all your seed at once-if you lose that planting, you lose it all!) when you remove it from the freezer allow the jar to warm to room temperature before opening. This prevents condensation from forming on cold seeds and partially rehydrating them. Partially rehydrated seeds may exceed the 8% moisture level and die when refrozen. Choose the smallest jars possible to avoid frequent openings and temperature fluctuations to keep the remaining seed in best condition.

Germination Testing

Germination rate is a way to measure how many of the seeds you have stored are still viable. It is usually expressed as a percentage. To test your germination rate you'll need several easily available items, as well as a fairly warm place to do it. Several paper towels or squares of cloth about 12x12 inches and some plastic bags will do it.

Moisten one square of cloth or a double or triple sheet of paper toweling and ring out the excess moisture. Lay the square flat. Place a counted number of the seed you want to test on the cloth (use a separate cloth for each variety). Use a minimum of 10 seeds, up to 100. The higher number of seeds will give you a more accurate result. Use a minimum of 25 seeds when your supply allows.

Lay a second towel moistened like the first one on top of the seeds. Starting at one side, roll up the seed sandwich. Place it in a plastic bag. Don't seal it-seeds need oxygen to germinate. The plastic coating slows the drying, keeping in warmth and a constant moisture level. Place the bag in spot where the temperature remains steady and fairly warm-between 70 and 80 degrees F. The top of the refrigerator or water heater is usually a good spot. If you have gas appliances, find an alternative in a different room-natural gas inhibits germination in certain seed species. Solanacea seeds are especially susceptible.

If moisture and warmth remain constant, most species of vegetable seeds will start to germinate within 7 days. Check the seeds daily; remoisten if the roll is drying. A small sprayer works well to supply the needed moisture while avoiding over watering that might result in rot. Use room temperature water-cold tap water will slow the experiment. The additional air circulation provided by daily or every other day checks is beneficial to germination. Replace the roll in the spot you have chosen between checks.

After the first 7 days, unroll the seed cloth and count the number of seeds that have germinated. Remove them. (In my experience, you can salvage some of these germinated seeds by planting them immediately in peat pots of potting soil or similarly prepared containers-cover lightly with compost or potting soil and mist until uniformly moist. Place on window sill or under lights and treat like any other seed start.) Remember that number- mark it on the plastic bag with a magic marker if you aren't keeping notes. If less than 80% of your seed has germinated, you may wish to continue the test for another week-or longer if you are checking slow-to-germinate varieties.

Seed packets and catalogs usually give "days to germination" for each variety. You may wish to double the time given for your test. Don't forget to moisten and check the roll at least every other day to ensure good air circulation.

Now it's time to do the math! Depending on the number of seeds you started with, each germinated seed has a point value:

# of seeds in test	% point for each seed germinated
10	10
25	4
50	2
100	1

Add together the total number of seeds that successfully germinated during your test. Multiply the number of germinated seeds by the percentage points for each number you began with. For example, in my last germination test, I used 25 3 year old pea seeds. I got a good result- 21 seeds germinated, giving me a germination rate of 84%. This group of seed was good enough to plant this year, and potentially safe to store under the optimum conditions I described earlier for at least one more season. Germination rates lower than 70% are associated with poor seed vigor and should not be depended on to feed your family. When your storage seed germination rates drop below 70%, replace them for continuing "seed security". Happy Gardening!