

## Home Germination Testing

At one point or another, every gardener has stumbled upon a forgotten packet of seed on a high shelf or in the back of a dark cupboard. The seed may bring a season of bounty or disappointment. Before wasting hours of labor and precious garden space on seed that won't return the flavor, you may want to test the germination rate. Home germination testing can be done with minimal effort, using common household items.

## Supplies

- Thermometer
- Ziploc bags, plastic bags, or plastic wrap
- Rubber bands
- Pencil or marker
- Paper towels
- Cup or container
- Spray bottle
- Nail clippers (optional)

## Before you begin

Germination testing requires you sacrifice a few seeds. If your seed quantity is very low, skip the germination test altogether and carefully plant what you have.

Using information on the seed packet or your own background knowledge, determine the germination requirements for your seeds. Some species require special procedures such as soaking or pre-chilling prior to planting. If you are testing a cool season crop, use a thermometer to find a suitable area in your home between 55-70 degrees F during the day. Warm season crops should be kept between 80-85 degrees F. It is preferable, though not required, that the temperature drops by 10-15 degrees at night. Some crops require light to germinate while others need complete darkness; check the packet, publications, or online references for this information.

## Test Setup

Layer two paper towels and write the variety and start date on the top towel using a pencil or water resistant marker. Moisten, but don't soak, the towels with clean tap water using a spray bottle. Too much moisture promotes bacterial and fungal growth. If water wells up around your finger when you press on the towel, it is too wet.

Set aside your seeds to test. Use at least five seeds, keeping in mind that the more seeds you use, the more accurate your results will be. While we typically use 200 seeds at Seed Savers Exchange, using 20-25 seeds should be sufficient at home.

Line up the seeds on the damp towels in one or two rows about 1" from the top of the towel. Space small seeds at least 1/2" apart and large seeds at least 1" to 1 1/2" apart. Leave 1"-2" of extra space on the ends. Fold the towels in half from the bottom up over the seeds and then loosely roll the towels from one side to the other. (If your seeds are tiny or require light to germinate, do not fold the paper towel; arrange the seeds on top and place flat in the bottom of a clear container, covering with a clear lid or plastic wrap.)

Place the roll in a plastic bag or plastic wrap and set in a container with the open end of the towel up. Place the container in an area that suits the crop's germination needs. For crops that need pre-chilling, place the container in the refrigerator for a few days then move to a warm location to start the test. For warm season crops, the top of a refrigerator or computer tower works well. A basement or north-facing windowsill is best for cool season crops. Allow some indirect light for most seeds. Do not place in direct sunlight.

## **Evaluation**

Check the towel moisture each day and add water when necessary. You can start checking the seeds as early as 3 days after setup. If you find moldy seeds, count them as dead and remove them or the mold may spread to other seedlings. You can count and remove the healthy seedlings as they develop. Keep track of how many days it takes the seed to germinate for future reference. The test is over when all the seeds have germinated or the normal number of days to germination is up.

## **Hard seed**

Some crops, like beans and okra, may contain hard seeds. These are seeds that don't sprout, but also don't become swollen, moldy, or soft during the test. This is because the seed coat becomes impermeable to water as the seeds age. Hard seeds may still be viable, but they require that you scarify (scratch or nick) the seed coat before planting. A pair of nail clippers works best for this. Scarify the surface opposite the seed hilum, or point of pod attachment, where you are least likely to damage important tissue.

## **Calculating results**

To calculate germination percentage, divide the number of healthy seedlings by the total number of seeds in the test and multiply by 100. For example, if you started with 25 seeds and had 20 healthy sprouts, your germination rate would be 80%. The lower the germination rate, the sooner the seed should be grown.

$(\text{Healthy seedlings} / \text{Total seeds}) \times 100 = \text{Germination \%}$

## **Special notes:**

Environmental stresses may reduce the field germination rate of your seed. A germination test does not test seed vigor. Seed vigor may decrease even as germination rate remains constant. To maintain high vigor and germination, store seeds at low, constant temperatures with very low humidity. Some species or varieties simply don't have the same storage life as others, which is why regular germination testing is so important.

If you would like to save your seedlings after the test, know that many species can't handle transplanting at such an early stage. Stems and roots are fragile, and a sudden change in environment can trigger shock. If you're determined to save the seedlings, leave them attached to the paper towels and cut around their roots. Grow indoors in a clean, loose seed starting mix until ready to be moved outside.



## References:

- Ashworth, Suzanne. *Seed to seed: Seed saving and growing techniques for vegetable growers*. Decorah, Iowa: Seed Savers Exchange, 2002.
- Cherfas, Jeremy, Michael Fanton and Jude Fanton. *The seed savers' handbook* (2nd ed.). Bristol, United Kingdom: Grover Books, 1996.
- Organic Seed Alliance. *A seed saving guide for farmers and gardeners*. Port Townsend, Washington, 2010. Retrieved from <http://www.seedalliance.org/Publications/>.
- Rogers, Marc. *Saving seeds: The gardener's guide to growing and storing vegetable and flower seeds*. Pownal, Vermont: Storey Communications, Inc., 1990.

