



AGRONOMIC SPOTLIGHT



VEGETABLE SEED STORAGE AND HANDLING

- » The seed of many vegetables can be stored for one year without appreciable decrease in germination rate or seedling vigor.
- » Temperature and humidity conditions during storage can impact the shelf-life of vegetable seeds.
- » Careful handling of seed can help prevent damage to the seed coat and plant embryo.

SHORT-TERM SEED STORAGE

In the time between delivery to the farm and planting, seed intended for use during the upcoming season (within 6 months) should be handled and stored with care to preserve the quality and viability of the seed. Whenever possible, store seeds in the unopened packages in which they arrived from the seed company or seed supplier. If packages have been opened, consider placing them in a container with a sealable lid, such as a canning jar or sealable plastic bin. Assume that the self-life of seeds will decrease once a seed package is opened.¹

High temperatures and humidity can reduce seed vigor and germination rates. Therefore, seed should be stored in cool, dry locations, and not exposed to direct sunlight. Household refrigerators can be used for storing small quantities of seed. For short-term storage, seed should be kept in a location where temperatures are approximately 59°F (15°C). Avoid locations where temperatures rise above 68°F (20°C) and below 33°F (1°C). Relative humidity levels between 40 and 60% are recommended. Some types of seed, (primed lettuce, primed fennel, primed/treated carrot, primed/treated leek,

primed/treated onion) are more sensitive to high temperature conditions and packages of these seeds may include a label indicating "Store at 8°C (46°F)."¹

LONG-TERM STORAGE (CARRYOVER)

Whenever possible, seed should be used in the same year in which it was delivered/purchased.² However, sometimes seed is not used in the season for which it was intended, and growers want to carryover the seed and plant it in a following season. Generally, vegetable seeds can be kept for 1 year without an appreciable decrease in germination rate or seedling vigor.³ Seminis recommends to use all seed within 2 years of the date of purchase to ensure quality. If seed is carried-over, it is recommended that the germination rate of the seed be tested at least once a year at an International Seed Testing Association (ISTA) accredited facility before the seed is planted. Carryover is not recommended for the following types of seed:²

- insecticide treated seed
- primed seed
- bean, lettuce, or onion seed
- pelleted seed

Seed moisture and storage temperatures affect the shelf-life of seeds in long-term storage. Fluctuations in temperature and humidity during the storage period can be harmful to the seed, reducing the storage time and seed quality.⁴ Avoid storing seed at temperatures above 70°F (21°C) and humidity levels above 60%. The optimal temperature range for storing most vegetable seeds is between 35° and 40°F (2° and 4°C), and humidity levels should be below 40%.² Household refrigerators usually maintain temperatures just below 40°F (4°C). However, humidity levels inside refrigerators can be higher than recommended. If vegetable seed are stored in a refrigerator, they should be stored in their original, unopened packages or placed in sealed containers to maintain low humidity levels (Figure 1). Seed in non-moisture proof paper packages should also be stored in sealed containers. Sealed cans, jars, or bins are preferable to plastic bags, and silica gel desiccant (available from craft supply stores) can be added to the containers to help keep humidity levels low.^{2,3,5}



Figure 1. Seed should be stored in sealed, moisture proof containers to help keep humidity levels and seed moisture content low.

(continued on page 2)



VEGETABLE SEED STORAGE AND HANDLING

(Continued from page 1)

SEED HANDLING AND TRANSPORTATION

Vegetable seeds are living organisms, and they should always be handled carefully to prevent damage to the seed. The outer layer of a seed, called the seed coat, protects the plant embryo inside the seed. However, the seed coat layer can be fragile and easily be damaged if seed is mishandled. The seed coats of bean, pea, and sweet corn seeds are particularly fragile and susceptible to damage from handling. The applied coating on pelleted seed is also susceptible to breaking if not handled correctly. Seed with broken pellets are more difficult to plant, as they can clog planters, and broken pellets can reduce the effectiveness of the pelleting treatment (Figure 2). Bags of these types of fragile seed should be handled carefully, never dropped or thrown. Damage from improper handling can result in reductions in germination and seedling vigor.^{1,2}



Figure 2. Broken coatings on pelleted seed can result in clogged planters. Applied seed treatments can lose effectiveness if the pellet coating is damaged or broken.

When transporting seed, avoid high temperature conditions and substantial fluctuations in temperature. When possible, transport seed in a temperature-controlled container. Do not place seed near a heat source and do not allow seed to sit in direct sunlight while being transported.

Sources:

¹ Bayer/De Ruiter – Seed Handling & Storage Recommendations. 2019.

<https://www.deruiterseeds.com/en-au/resources/seed-and-plant-handling-tips-for-growers-and-plant-raisers.html>.

² Drost, D. Vegetable production – seed storage and handling. In Production and Pest Management Guide. Utah State University. <https://vegetableguide.usu.edu/production/vegetable-production-recommendations/seed-storage-handling>.

³ Ellis, J., Bass, L., and Whiting, D. 2013. Storing Vegetable and Flower Seeds. Colorado State University Extension. Fact Sheet No. 7.221.

⁴ Carr, B. Handling and storage of seed. NRCS. https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/txpmonl11816.pdf.

⁵ MacKenzie, J. and Grabowski, M. 2018. Saving vegetable seeds. University of Minnesota Extension. <https://extension.umn.edu/planting-and-growing-guides/saving-vegetable-seeds>.

Websites verified 5/18/2020.

For additional agronomic information, please contact your local seed representative.

Performance may vary from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields. The recommendations in this article are based upon information obtained from the cited sources and should be used as a quick reference for information about vegetable production. The content of this article should not be substituted for the professional opinion of a producer, grower, agronomist, pathologist and similar professional dealing with vegetable crops.

BAYER GROUP DOES NOT WARRANT THE ACCURACY OF ANY INFORMATION OR TECHNICAL ADVICE PROVIDED HEREIN AND DISCLAIMS ALL LIABILITY FOR ANY CLAIM INVOLVING SUCH INFORMATION OR ADVICE.

2050_SE_S2 Published 07/15/2020