



Save Seeds, Save Our Future

Seed Saving Activity with Tomatoes

Part #1: Processing Seeds

Saving seeds from a tomato is a fun way to dip your feet into the ocean of seed processing, cleaning, initial drying, and storage.

Take photos of your seed saving process and insert them into the Seed Saving Activity PowerPoint template.

Duration: 3-4 days

Materials:

- Fresh Tomato
- Cutting board
- Knife
- Spoon
- 4oz glass jar
- Paper towel
- Rubber band
- Strainer
- Aluminum pie pan or similar vessel
- Parchment paper or coffee filter
- Organza (netted) Jewelry bag, organza gift pouch or similar netted pouch



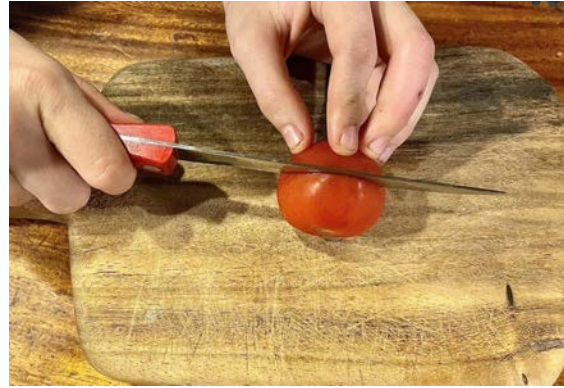
Process:

1. To perform this activity, it is recommended that you obtain at least 1 large tomato. (Use a tomato that is “ripe” usually the darker red the better.)

If you do not have any tomatoes growing in your garden, you can buy a tomato from the grocery store or the farmer’s market. Any tomato will work for this exercise but in the future, when you are saving tomato seeds they should only be from an open-pollinated tomato plant (not from the store).

NOTE: If you bought your tomato at the market, keep in mind that most available varieties are Hybrid (F1) strains: genetically unstable seeds that will result

in plants possessing few characteristics that are true to type. This means that the resulting plants (F2 generation) will be generally less vigorous, more genetically variable and lower yielding than their parent plants.



2. Place the tomato on the cutting board. Using a knife, slice the fruit in half around its equator.



3. Use a spoon to scoop or use your hands to squeeze the seeds from the fruit into the glass jar. Collect as much of the seeds possible with the least amount of pulp, but don't worry if you get some pulp.

OPTIONAL - Add Water: If your tomato has little liquid inside the fruit add just enough water to cover the seeds in the jar.



4. Cover the jar with a paper towel and use a rubber band to seal.

Fermentation:

1. Label the jar with the seed variety and seed collection date.



2. Allow this mixture to sit on a countertop out of direct sun to ferment at room temperature for 2-3 days.

NOTE: Fermentation is a processing technique for wet seeded crops that a) makes the cleaning of seed easier by loosening the attached pulp, b) removes germination-inhibiting gel from the seed, and c) destroys some seed-borne diseases. Other fruits which use fermentation process to ensure high seed germination rates include cucumbers and eggplant.



(Do not be concerned if mold forms on top of the mixture. It is not harmful, but is in fact, an indicator of the fermentation process!)

Cleaning:



1. Fast forward 2-3 days. When fermentation is complete, pour off or scoop out the excess liquid, as well as any floating mold layer, mold, and non-viable seeds that are floating.



2. Place the seeds and pulp in a strainer with small enough holes that the seeds don't fall through. Under cool running water, GENTLY and carefully rub the pulp with seeds with your fingers until the seeds are free of pulp.

Initial Dry:



1. After allowing the strainer to drip dry for a few minutes spread the seeds in a single layer on a coffee filter or a piece of parchment paper placed within an aluminum pie pan (or spread seed directly on any other nonstick shallow container or tray).



2. Let the seeds dry in a well ventilated (but not windy) location until they are dry to the touch. This process can take anywhere from 3 to 24 hours.

Before

After



3. To prevent tomato seeds from clumping in storage we must remove the hairs on the seed coat.



4. First place seeds in an Organza (netted) Jewelry bag and cinch tightly.



5. Next position your hands on weather side of the Organza (netted) jewelry bag and rub your hands together vigorously (but be careful not to damage the seeds).

Part 2: Seed Drying and Storage

To properly store the seeds you have processed thus far, refer to the following options for seed drying using *Self-defrosting / Humidity-Controlled Refrigerators* or *Seed Drying Kits*.

***Self-defrosting / Humidity-Controlled Refrigerators* for seed drying:**

Self-defrosting or humidity-controlled refrigerators can be utilized as drying cabinets for seed. In general, these refrigerators keep the air dry at levels adequate for seed drying, however individual units may vary, especially if the door is opened often and moisture-laden items such as produce and liquids are stored inside.

Spread seeds in a thin layer in a shallow wide-mouthed container (choose a container with an accompanying lid, but don't put the lid on yet). Allow the seeds to rest in the open container in the refrigerator for a month. When you are ready to store the seeds, open the refrigerator door and quickly put the lid on the container. Next, take the container out of the refrigerator and place it in a shaded location. Once the container has come to room temperature, you can open it and pack the seeds for storage.

Seed Drying Kit

The following instructions are recommended for drying your seeds using a seed-drying kit. Drying kits can help you preserve the viability and longevity of your seeds by ensuring minimal moisture content within the seed so that they don't prematurely germinate and/or rot and grow mold when stored.



Seed Drying Kit Materials:

- ✓ Loose silica gel beads
- ✓ Dry cards – (from UC Davis) or
- ✓ Optional Hygrometer
- ✓ Small-flat-open containers (e.g., paper plate, paper boat, aluminum pie pan, etc.)
- ✓ Coffee filters/paper towel
- ✓ A container with an air-tight lid to enclose the above materials
- ✓ Waterproof Marker or Pencil for labeling

Air-tight Container: First, choose a container that as small as possible in relation to the volume of seeds you are drying. It will also need to hold all the drying materials. Begin by wiping the inside of your container to make sure it is completely dry.

How to set up your Seed Drying Kit to dry your seeds:

1. Weigh or estimate the weight of the seeds. The weight ratio of silica beads to seeds should be about one-to-one.



2. Place the appropriate amount of silica beads in the bottom of your drying container (use the breathable bags to hold the beads if your container allows).

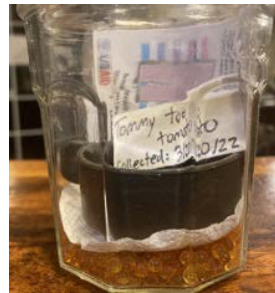
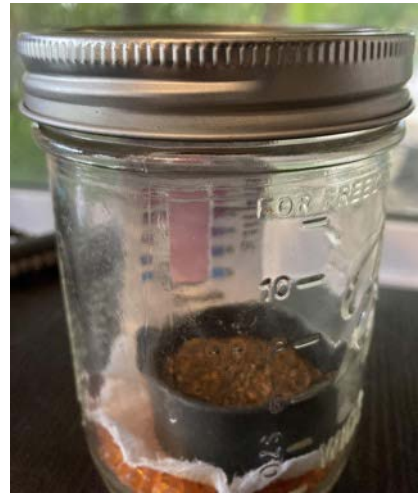


3. Layer the seeds on the flat-open container lined with paper towel or coffee filter and place in the drying container on top of the silica beads.

Note: The seeds should NOT be in direct contact with the silica beads.

- a. For larger seeds (e.g., beans), there should only be a single layer of seeds.
- b. For smaller seeds (e.g., lettuce), a layer of seeds less than ½" thick is ideal.

4. Place the dry card in the drying container, then put the lid on your container and store it in a cool, dark place and leave it undisturbed for at least 60 min. After 60 minutes, if the dry card is blue (indicating the seeds are adequately dried), remove the dry card, and prepare your seeds for storage. If the dry card is pink, continue drying your seeds until the dry card turns blue. Depending on seed size and density, this can take anywhere from a few days to a few weeks.
5. Instead of using the dry card, another way to tell if your seeds are dry enough for storage is to use a hygrometer and watch for an indication that the humidity in your dry container is 30% or lower.
6. To store, pack each seed variety into its own sealable bag (e.g., coin envelope) or airtight container (relative to size of seed lot) and label it with the seed type and date of storage.
7. For long-term storage, store seeds in airtight containers in the refrigerator.



Extra information on materials included in seed kit:

- ✓ *Loose silica gel beads:* Silica gel is a form of silicon dioxide (made from sodium silicate) which is used to dry seeds. High humidity may cause seeds to germinate prematurely and/or cause fungal damage. Damage can result from the high absorption capacity of seeds high that are not completely dry. To recycle silica gel beads, dry them in a 250°F oven for about 2 hours, or microwave for 10 minutes on the defrost setting, until the beads turn orange, or per manufacturer's directions.

NOTE: It is recommended that you buy silica gel beads that turn colors to indicate their point of saturation otherwise it can be hard to tell. You can purchase various types and quantities of beads online: [Silica Gel Beads \(dryndry.com\)](http://dryndry.com)

Unsaturated

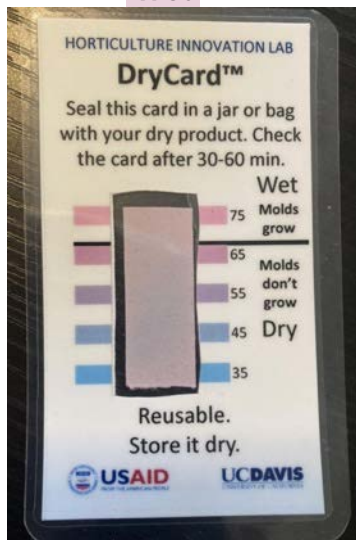


Saturated



- ✓ *Dry Cards* from UC Davis: Dry cards are sensitive to moisture in the atmosphere and change colors depending on the level of relative humidity. In an airtight container, the relative humidity in the air reflects the relative humidity of the seed at that given time. The cobalt chloride humidity indicator on the dry card will turn pink when the seeds are wet and blue when the seeds are adequately dry and ready for storage. For more information, view: [DryCard | Feed the Future Innovation Lab for Horticulture \(ucdavis.edu\)](http://DryCard | Feed the Future Innovation Lab for Horticulture (ucdavis.edu))

Wet



Dry



Additional Resources: [Tomato Breeding in Hawai'i](https://gms.ctahr.hawaii.edu/gs/handler/getmedia.ashx?moid=6996&dt=3&g=12)
(<https://gms.ctahr.hawaii.edu/gs/handler/getmedia.ashx?moid=6996&dt=3&g=12>)

Read this publication if you are interested in learning more about tomato varieties produced in Hawai'i.