

Saving Tomato Seeds by Fermentation

Tomato seeds are coated with a thick layer of gel that reminds me in appearance of a fried egg, with the gel blob surrounding the seed in the center. For the seed to successfully germinate, the gel coat must be removed. In nature, this occurs with natural weathering and rotting processes. In a therapeutic horticulture, this is done manually. Some gardeners recommend removing the gel coat with specific cleansing agents. This can be done; however, the cleaners must be purchased and do not renew themselves. Fermentation of the seeds is an easy and nearly free process.

To successfully remove the seed's gel coat through fermentation, first remove the seeds from the fruit. In cherry-sized fruits, it is often simplest to cut the fruit in half and squeeze the gooey contents into a jar. I have used glass jars and plastic jars with equally successful results. I like glass canning jars the best as I can sterilize them in boiling water or a specific cycle in the dishwasher. Place the goo and seeds in your jar. Add enough plain water to rise two inches (I often use more) above the seeds. Some gardeners prefer to add little to no water, but I find that the gel can dry out before it ferments if there is insufficient moisture in the jar. Cut a piece of paper towel to cover the jar opening and write the name of the variety on it. Cover the jar with that paper towel piece and secure with a rubber band or jar ring (see Figure 1). Covering the jar in this way allows air flow while reducing the unpleasant aroma of fermentation and access of insects. Place the jar(s) in a safe location and wait. You will know that fermentation is successful when you look into the jar and swirl the contents. The seeds should settle to the bottom of the jar in a little heap, without visible separation due to the gel coats. The fried egg appearance is gone. You may have to remove a layer of mold from the fermentation before you can see this.

At this point, I want to mention the misconception I have read all over gardening forums, which is that fermentation kills all plant diseases (bacterial, fungal, and viral) on the seed coat. The only plant disease that I have found fermentation-destroying evidence in science plant journals is bacterial canker. There are a large number of other plant diseases of fungus, bacteria, and virus. If you ferment tomato seeds with no added water at temperatures not above 70F, for 96 hours with twice daily stirring, bacterial canker may be destroyed on the seed coat. I don't know how it is where you live, but in my home in the Florida panhandle, the day temps in my house are never less than 74F...and they are 78F for over 300 days of the year. Also, with no water, the fungus and bacteria that grow in my fermentation jars with my normal home temperatures in central air conditioning discolors the seeds and is nearly impossible to separate the seeds from. The reason to not dilute with water is to keep the fermentation quite acidic. I ferment with lots of water for 3 days (beyond 96 hours can reduce germination) and use the hot water treatment procedure as set forth by Cornell University to address many tomato disease pathogens that are in the seed or on the seed coat. I use a sous vide to achieve exact temperatures, and I am easier in my mind knowing that I am selling clean seeds. If tomato plant diseases are not rampant in your area, then you may not need to perform any treatment other than fermentation to get clean seeds.



Figure 1. Tomato seeds in jars beginning the fermentation process of seed saving. Image by author.

When the gel coats are destroyed, add water to the jar and wait a few seconds. The viable seeds will settle to the bottom, and you can pour off the dirty water at the top of the jar. Repeat this step until the water is fairly clean. Once the water is mostly clean, empty the seeds into a small strainer and rinse under running water thoroughly. At this point, the seeds should not feel slick or slippery to the touch. If there is a slippery feel to the seeds, then the gel coat is still present, so the fermentation process should be repeated.

Next, empty the seeds from the strainer onto a flat surface to dry for several days. As seeds stick to paper towels, I use squares of baking parchment on top of paper plates (see Figure 2). I use both the parchment and the plates again and again. When the seeds are completely dry, they must be separated from each other by rubbing them between the fingers.



Figure 2. On a rather large scale, tomato seeds are drying on paper plates prior to storage. Image by author.

Store the seeds in a cool, dry location out of direct sun. Plastic zip envelopes as well as paper coin envelopes are often used for seed storage. If you live in a very humid climate, place a pinch of raw (dry) white rice into each bag with the seeds to absorb moisture and prevent mold. Seeds saved in this way will remain viable for 3 to 5 years or longer.