

Seed Stratification

Not all seeds are immediately ready for germination once removed from the plant. Some seeds will only germinate after special conditions have been met. Seeds will wait to germinate until conditions are just right. By delaying germination, they maximize their growth potential. For example, some seeds will not germinate until they have been subjected to low temperatures or a winter season. It is not necessary for the seed to actually spend the cold months in the ground, as long as it senses that it did. This can be done by placing the seeds in a small container with moist sand, peat or vermiculite and leaving it in a refrigerator at 40 degrees Fahrenheit for four to six weeks. This procedure is known as **stratification**. Stratification involves placing the seed in a moist medium to simulate the natural conditions it "expects" from its environment. Once it spends the time in this simulated environment, the seed can be planted in the soil at normal temperatures and watered as necessary.

Some seeds have tough seed coats. These seeds remain in the soil until weathering has weakened the seed coat. Some seed coats are weakened in the stomachs of animals that eat the fruit and pass the seeds. Scratching the tough seed coats with sandpaper, a file, a knife, or by treating them with acid is called **scarifying**. In any case, once the seed coat has been weakened the seed can absorb water and grow.

Some seeds, especially those of trees and shrubs, are not able to germinate after they are collected. Some seeds require a time period for the seeds to develop their immature parts. For seeds that require a development period, dry storage will usually be sufficient.

Preparing Apple Seeds

Apple seeds will germinate if the fruit has been in cold storage long enough to trick the seed. Otherwise, the apple seeds will need treatment. Stratification will require cold storage at about 5 degrees C or 40 degrees F for two to three months. After planting, the temperature should simulate early spring and not exceed 22 degrees C or 75 degrees F. The seeds may return to dormancy under high temperatures before they sprout.

Preparing Peach or Cherry Seeds

Remove all flesh from the pits and rinse thoroughly. Juices from the fruit may ferment and prevent the seed from germinating. Stratification should be performed on the pits by placing them in moist peat moss at about 5 degrees C or 40 degrees F for two to three months.

Preparing Citrus Seeds

Students can grow an indoor tree from seeds from oranges and other citrus plants. Save seeds from oranges, grapefruit, tangerines or other citrus fruit. Citrus seeds should be rinsed and then planted immediately after the removal from the fruit. Citrus seeds should not be allowed to dry out. Plant them in regular potting soil in a small pot (6 inches or less). Plant your seeds about a half an inch deep and cover with soil. Leave one inch between seeds to give plenty of room to grow. Keep the soil moist, and put your plant in a warm, sunny spot. The seeds will germinate in 15 to 30 days. Once they sprout, suspend a 75 watt bulb about 30cm above the plant to stimulate growth. When the seedlings have at least four leaves, put each seedling in its own, small pot. It will need four to five hours of sun per day and will need water about three times per week. Watering is very important for the first six weeks since citrus trees often die from dehydration. As the plant grows, pinch back (cut or pinch off the center, tiny leaves) the tips of new growth to make it bushier.

Preparing Pomegranate Seeds

These seeds will develop into a shrub that produces brilliant orange flowers. Remove the arils from the fruit and crush them. Dry any juice from the aril with a paper towel so it does not mold while germinating. Then plant them in potting soil right away in a small pot (6 inches or less). Plant your seeds about 1/2 inch deep and cover with soil. Cover with plastic and keep warm (70F - 80F) until it germinates (in four to six weeks). Once the seedlings have four or five leaves, they will need separate pots. Transplant the seedlings into a 5-inch pot filled with sandy soil. The plants require two to three hours of partial sun and need to be watered weekly.

Preparing Pumpkin Seeds

Remove pumpkin seeds from pumpkin. Rinse seeds with water and allow to air dry. File the edges of the seed lightly with a nail file. File all edges except the pointed end. This allows moisture into the seed easier. Filing the seeds makes it easier for the leaves to emerge from the seed without damage. The shells of giant pumpkin seeds are very thick, and the leaves sometimes have difficulty splitting open the shell. To avoid pinched or damaged primary leaves, we recommend filing the edges of the seeds for all giant pumpkins. Soak the seeds in warm (not hot) water for an hour or two. Plant in soil 1"-2" deep. Place the seed either on it's side, or with the pointed end down. Water thoroughly. The sprout will emerge in four to six days. The pumpkin seedling immediately needs a lot of light, as much as possible. Provide water to the pumpkin every couple of days. Let the soil dry out a little on the top, then water thoroughly.

Preparing Tomato Seeds

Tomato seeds are found in a “gel-like” sack within the tomato. This sac contains growth inhibitors, to prevent the seeds from sprouting inside the tomato. To remove this gel covering, the fruit must be allowed to rot and ferment. In nature, this happens when the fruit falls off the plant. The process is listed below:

1. Choose seed from healthy tomatoes. Slice the fruit in half to expose the seed cavity and scoop the seeds into a clean bowl or jar. Some of the flesh will be surrounding the seed.
2. The seeds should be floating in liquid from the tomato. If they are not, add up to a cup of water to help separate the seeds from the pulp. Then set the bowl of tomato seeds and pulp in a warm location. Keep in location for 2 – 4 days. The fermentation process then begins. Glass jars make a good container for fermenting tomato seeds. The top of the jar can be covered with cheesecloth or paper towel to minimize fruit flies being drawn to it and also diminish the unpleasant smell caused by fermentation.
3. When fermentation is complete, a layer of mold will be seen on top of the seeds & pulp. When the process is completed, bubbles will start rising from the mixture and it is covered with mold. In a glass jar, you will also see that the seeds have settled to the bottom of the jar and the thicker pulp and mold is on top. Now we are ready to remove the seeds.
4. First, remove and dispose of the mold on top of the seeds. Add water to the jar or bowl and stir or shake vigorously. The good seeds will settle to the bottom.
5. Rinse the seeds well under water using a strainer. Remove any pulp bits still on the seeds.
6. Now the seeds must be dried. Spread the seeds onto a paper plate. Set them in a warm, dry spot and allow them to dry completely. Shake them on the plate daily so they stay separate and dry evenly.

7. Once the seeds are completely dry, they can be stored in an air tight container, in a cool, dry place until ready for planting.

Preparing Mango Seeds

1. In a bowl, combine water, cracked charcoal, and the seed.
2. Soak the seed for a week to soften the tough shell.
3. In a 6" pot, plant the seed vertically. The eye of the seed should be pointed down in the potting soil.
4. Water the seed heavily. Use warm water only.
5. It will not germinate for four months.
6. It requires 4 – 5 hours of sunlight per day. Keep away from cold windows.

Preparing Watermelon Seeds

1. Use a watermelon that is slightly overripe and clean the seeds out of the fruit.
2. Wash the seeds. Wash them in clean water.
3. Drain the seeds in a strainer.
4. Dry the seeds. Spread out the seeds on a piece of cloth, coffee filter, or paper towel. Allow the seeds to dry out of direct sunlight for at least 7 days. The dry seed does not allow for disease or rot. To check if a seed is dried properly, the seed will break when bent instead of bend.
5. After drying is done, store in an airtight, cool, dark container for up to 12 months.

Preparing Avocado Seeds

1. Use the seed from a ripe avocado.
2. Wash the seed in warm water.
3. Dry the seed for a couple of days.
4. Fill a flower pot $\frac{3}{4}$ full of soil. Be sure the pot has drainage holes.

5. Place the seed, pointed end up, in the soil so that about 1/3 of the seed is above the soil level.
6. Keep the soil fairly moist and the temperature is between 60 and 70 degrees
7. Germination will occur in 30 – 90 days.
8. Requires 3 – 5 hours of sunlight daily.
9. Watering should occur weekly.