

What a Seed Needs

Seeds are alive. They contain a plant embryo as well as food for the embryo to eat before growing tall enough to reach sunlight. Seeds don't germinate—that is, start to grow—until they experience the right air, temperature, and moisture conditions for them to sprout and survive.

Different seeds need different growing conditions to germinate. Some trees, like eucalyptus and lodgepole pines, require fire to release seeds from their protective resin. Some seeds need to get cold in order to germinate, while others need lots of water or specific soil nutrients.

However, most seeds don't need light to sprout! In fact, they often grow better in the dark. Light can inhibit some seeds from growing completely. Onion species, for example, will not germinate if left in sunlight. Begonia species, on the other hand, require sunlight to germinate. It all depends on the seed!

Materials needed:

- Pushpin
- 2 opaque containers (i.e., yogurt cups)
- Marker
- Soil
- 4 seeds of the same plant
- 1 container lid
- 1 plate

Step-by-step instructions:

1. Use the pushpin to carefully poke 6 drainage holes in the bottom of both containers.
2. Write the date on the side of both cups and “No Sun” on one cup.
3. Fill both cups halfway with soil.
4. Plant 2 seeds in each container (if you are using a seed packet, check the planting depth information).
5. Wet the soil until water drains out the bottom of the cups.
6. Carefully poke 6 holes in the lid and place it on the cup labeled “No Sun.”
7. Place both cups on a plate near a sunny window.
8. Make a prediction about how long it will take for your seeds to sprout.
9. Check your seeds every day, watering lightly when the soil feels dry.



Sunflower seedlings, just 3 days after being planted. (Image from Wikimedia Commons)

Additional explorations:

- Try this experiment under different environmental conditions. Will your seed sprout if you don't water it? Or without soil? What happens if you seal the cup to stop air from reaching the seeds?
- Try this experiment with different seeds. Do different plant species react differently to low light conditions?

Discussion questions:

- How many days did it take for the seeds to sprout above the soil?
- Did the seeds that received no direct sunlight germinate?
- Do you think seeds require light to germinate? If not, what does a seed need to germinate?
- What do you think could increase or decrease the germination time of a seed?