



HLA-6506

Plants in the classroom: Successfully starting seeds

December 2025

Introduction

Growing plants in the classroom is a great way to explore life cycles. Studying life cycles enables children to have a deeper appreciation and understanding of the natural world. Many teachers introduce plants to students by planting seeds in small pots and watching them grow. However, many students and teachers get frustrated when their seeds don't sprout (germinate) or the seedlings grow long and spindly (Figure 1). Here are several things you can do to increase the chances of success:

Choose the right seeds

The first step to successfully growing seeds is to select seeds that don't need any preparation beforehand. Some seeds need to have their seed coat scratched to simulate going through an animal's digestive system. Some seeds need to be in refrigeration, typically ranging from 33–36 F for weeks or months, to simulate winter temperatures. Some seeds even need fire to germinate. While you can successfully grow these in classroom setups, these seeds are not good for beginning growers. Feel free to experiment with them, though.

Vegetable and grass seeds are usually some of the easiest seeds to grow. Basil seeds sprout very quickly, and radishes are ready to harvest after just a few weeks (even indoors).

Note: If using old seeds from previous years, you can determine if they will grow by doing a germination test. Put 10–20 of the seeds in a moist paper towel and put it all in a sealed sandwich bag until some of the seeds start germinating (Figure 2). If many of them do, the seeds are good to use. If just a few of the seeds germinate, you can plant extra seeds to have more chances of success. If none of the seeds germinate in the time they should (days to germination information is on seed packets), the seeds are too old to use. Seeds that you want to save for the future should be stored in a cool, dry, dark place, like a dark closet or a refrigerator.



Figure 1. Example of long and spindly (or 'leggy') seedlings - from the University of Minnesota, Natalie Hoidal.



Figure 2. Seed germination test results. Photo by [Homesteadandchill.com](https://www.homesteadandchill.com)

Use potting mix

Potting mix obtained from many big box stores or garden centers provides the best growth media for seeds (Figure 3). It is weed-free, disease-free and easier to clean up after students finish planting. Using soil from outside can bring in insects or disease-causing organisms and may be hard to grow in (such as soils with a lot of clay). Potting mixes usually have some combination of ingredients such as bark, compost, sphagnum moss and coconut coir. Potting mix is made for inside plants because it is lighter weight than actual soil, retains moisture, provides good drainage, has no disease organisms or pests and often has fertilizer incorporated into it.

Plant at the correct depth

Seed packets will include information on how deep to plant seeds of that species. This is important to follow. Seeds have just enough energy to germinate and grow up to the surface to reach sunlight. If planted too deeply, there will not be enough energy for the seed to reach the surface, and the seed will be unsuccessful. If it is planted too shallowly, the seed may dry out before it can germinate (Figure 4). Generally, a seed is planted two to three times as deep as its size. However, some species require light to sprout and, in this case, seeds would be planted on top of the soil mix to ensure maximum germination.

Provide the right amount of moisture

One of the biggest obstacles for growing seeds successfully is providing the right amount of moisture. In greenhouses, seeds are often started on mist benches. These are tables with water misters on timers, depending on the needs of the seeds (Figure 5). The misters provide water as needed, 24 hours a day, 7 days a week. Spraying seeds in a classroom a few times a day is not enough to keep them moist enough to germinate. There are commercially produced seed-starting domes that keep the humidity up for the germinating seeds, but an easy way to keep the moisture always available is to make your own miniature greenhouse.

After planting the seeds, water the containers well. When they have finished draining water, place the containers on a tray of some kind (doesn't have to be deep). Using clear plastic wrap or a large clear trash bag or gallon baggie, cover all the containers and the tray and tie shut. Within a day, you should see some condensation on the inside of the plastic. If you don't, you need to add more water. This will keep everything moist and create a little greenhouse (Figure 6). As the seeds start growing, use a stick or pencil to tent up the plastic and keep the plastic off the growing plants. Using clear plastic wrap lets the students see germination progress.

Provide warmth

Seeds need two things to start germinating: moisture and warmth. You can speed germination by placing the tray of containers on a seedling mat, which is a heated pad. They are available commercially. Seedling mats are not necessary, but they will help speed the germination process.



Figure 3. Examples of commercially available potting mix.

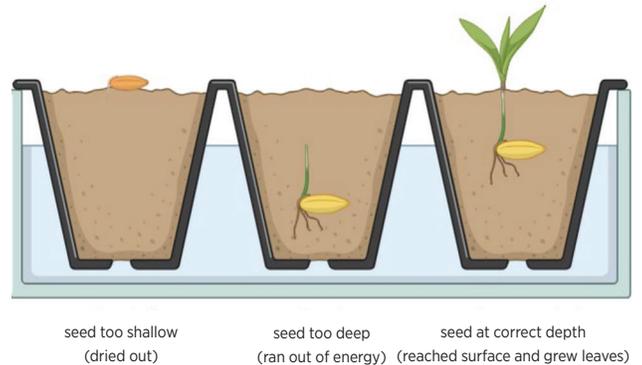


Figure 4. Examples of seeds planted at different depths, and the effects on seed germination. Illustration by Shelley Mitchell, Oklahoma State University Extension.

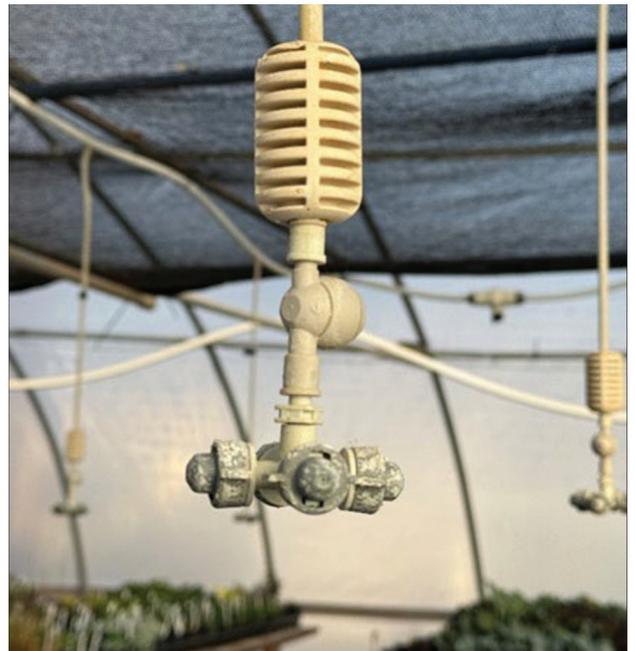


Figure 5. Greenhouse mister for starting seeds.

Provide light in close proximity

Another obstacle for growing in the classroom is the lack of adequate light. A sunny window often provides enough light, but since it is coming from one direction, the seedlings will get long and spindly and grow in that direction.

To have strong, upright seedlings, put light directly above them. Keep the light within a few inches of the top of the seedlings and raise the light as the seedlings grow. If you have a lot of seedlings, a shop light (tube) works well. A 5000K shop light from a big box store works. You can also use LED grow lights.

Just make sure the light is directly above all the plants, or some will start growing toward the light and not be as sturdy of a seedling. Full spectrum light (natural daylight, from infrared to ultraviolet) is best (Figure 7).

An easy way to keep light above the seedlings as they grow is to make the height of the light adjustable (using chains from a support, stacking books, etc.). It doesn't need to be fancy.

Use well-drained containers for seeds/seedlings

Seeds don't need to be started in commercially-produced seed trays or pots. Anything that can hold soil and provide drainage will work. Students can make their own pots out of newspaper or toilet paper tubes, or even lunch milk cartons (punch holes in the bottom). If you use materials that break down (such as newspaper pots or pots made from cow manure, peat or coconut coir), you can plant the entire container straight into the garden when the seedling is ready to plant.



Peer Reviewed

Shelley Mitchell

Senior Extension Specialist, Horticulture and Landscape Architecture



Scan the code or visit extension.okstate.edu/fact-sheets for more OSU Extension fact sheets.

EDUCATION EVERYWHERE FOR EVERYONE
Division of Agricultural Sciences and Natural Resources

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

Oklahoma State University, as an equal opportunity employer, complies with all applicable federal and state laws regarding non-discrimination. Oklahoma State University is committed to a policy of equal opportunity for all individuals and does not discriminate based on race, religion, age, sex, color, national origin, marital status, disability, or veteran status with regard to employment, educational programs and activities, and/or admissions.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 20 cents per copy. 12 25 SB.

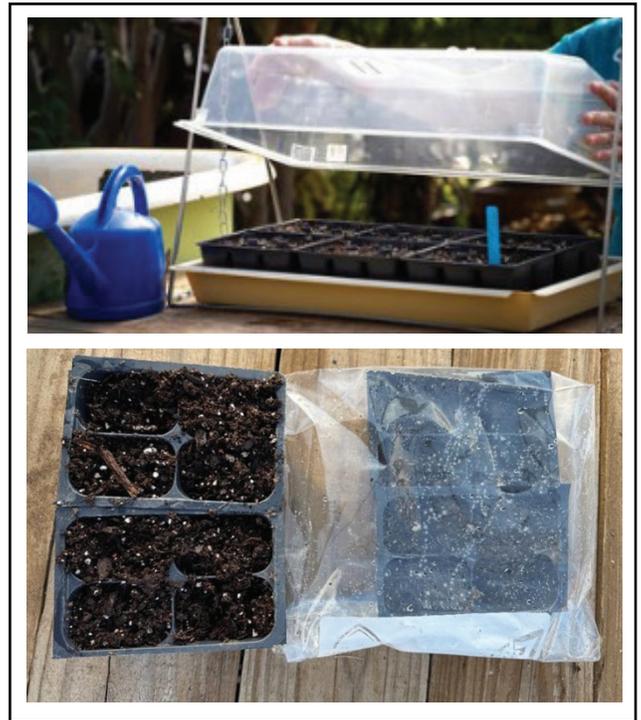


Figure 6. A dome helps keep humidity high for the seeds to start growing. A clear plastic bag can serve the same purpose.



Figure 7. A grow light in use.