

# Seeding and Transplanting

*One for blackbird, one for the crow,  
one for the cutworm, and one to grow.*

~ American saying

## ***Indoors or Outdoors?***

### **What crops are best started indoors in containers?**

Plants that can tolerate root disturbance and will benefit from a jump on the season are best to start indoors. You can find this information on seed packets and in planting guides.

- Cool weather crops such as broccoli, cauliflower, and cabbage can be transplanted into the garden up to a month before the last danger of frost.
- Warm weather crops, like tomatoes, peppers, and melons, should be transplanted into the garden after all danger of frost is past in your area.
- Flowers planting requirements vary, so check the seed packets. You can find your average last frost dates by asking local gardeners or your Cooperative Extension Office (Master Gardeners).

### **What crops are better started outdoors?**

Some crops prefer to be started directly in the garden. Root crops such as carrots, radish and beets don't transplant well, nor do other crops such as corn, beans, peas, squash, melons, and cucumbers.

Sometimes, caring for seeds directly sown in the garden is a challenge at schools (e.g., protecting them from pests, keeping seed beds watered). In that case, you can start corn, beans, peas, squash, melons, and cucumbers in containers. However, you should do so in larger individual containers rather than the pricking out method described above.

## ***Seeding Outdoors***

### **Direct sowing methods**

Seeds planted directly in the garden can be drilled (poked), broadcast (sprinkled) or planted in little furrows (lines). Refer to the seed packet for suggested methods of sowing seeds.

- **Drilling seeds** is as simple as poking a hole in the soil to the appropriate depth and then covering it with soil.
- **Broadcasting seeds** is a common method for grass or wildflower seeds. Broadcasting involves sprinkling seeds over the planting area and covering them with soil or lightly "scratching" in the seed.
- **Furrow seeding** is often used with crops such as carrots, beets or radishes. Dig a shallow furrow in the soil where you want your seeds to go and then drop in a line of seeds. Cover the seeds and pat gently. Furrow-planted crops may need to be thinned to the recommended spacing listed on the seed packet. Thinning is done once the plants begin to grow.

### Moisture needs for direct sown seeds

After you have directly sown your seeds in the ground, it is important to keep them moist until they germinate.

- Use a watering method that delivers a “gentle spring rain,” e.g., watering can or hose fan attachment. It may take many passes of light sprinklings to be sure the soil is moist beyond the depth of the newly planted seed.
- Avoid flooding your newly planted area as this can wash away seeds and/or cause your soil to form a “crust” on the top, which makes it difficult for some seeds to push through the soil.
- Keep an eye on your seedbed, and keep it constantly moist. Depending on the weather, you might need to water daily.

### Pest protection for young seedlings

Young sprouts are often tempting to birds and other critters! Try covering your seedbeds with floating row cover, bird netting, upside down strawberry baskets, or by hanging bird flash tape over your bed.

### Tips for sowing seeds with kids

- Help younger students to properly space their plantings. A few kid-friendly measuring techniques include
  - **using a sowing string:** before planting, stake down a string with knots or tape marking where the seeds should be sown.
  - **using “farmers’ measurements”:** before planting in the garden have children measure the distance from thumb to pinkie on their open hand and use their hand as a spacing guide.
  - **using marked trowels as rulers:** have kids measure and mark inches on their trowels and use it as a ruler.
  - **pre-“drilling” holes in the soil:** kids place their seeds into holes that are poked in the soil, or place large seeds on the soil surface where you want them to be planted.
  - **using sticks to mark spots where you want a seed:** have the student remove the stick and plant a seed.
- Another rule of thumb is “the smaller the kid, the bigger the seed.” Larger seeds are easier for younger children to count and sow. Otherwise you might have 50 radishes sprouting where you only wanted a few.
- Make sure you demonstrate the depth the seed needs to be planted at. Kids can use the knuckles on their forefinger as a marker of depth. You can also make drilling sticks by marking pencils or chopsticks every quarter inch and using these to poke the seeds into the soil.
- If working with many kids at one time have some students be the “inspector” whose job is to make sure the seeds are planted and at the right spacing.

## Seeding Indoors in Containers

### Why start seeds indoors

Starting seedlings indoors allows students to observe plant germination and provides a more controlled environment for young plants.

### Seeding containers

Select any type of container that is about 2-3 inches deep with drainage holes.

- Yogurt containers, small milk cartons and similar small containers work well.
- Nurseries often donate used, empty, plastic six-packs designed for seed starting.
- Paper pots are a resourceful container choice. See “Making Paper Pots” handout.
- If you wish to save space, you can sow seeds close together in wider containers called “flats” and then transplant them into individual containers once plants are 1-2 inches tall.

### Seed starting mix

It is best to use seed starting mix because it is light, absorbent, weed-free and sterile.

- Typical potting soil may be too light for consistent soil to seed contact.
- Garden soil is often too heavy for proper transplant root development.
- You can purchase seed starting mix, or make your own: Mix
  - one part horticultural sand
  - one part compost
  - one part coco pith fiber

### Planting seeds

Before planting, wet the soil mix completely so that it is as damp as a wrung out sponge.

- Fill containers then tap them to settle the soil.
- A good rule of thumb is to plant seeds about two to three times as deep as they are wide. You will also find the recommended planting depth on seed packets.
- A few types of seeds need to be closer to the top of the soil. They either require light to germinate or are very small. For these, press them gently into the top of the soil without covering them (check the seed package).
- After planting to the appropriate depth, water seeds with a gentle spray of water, let the water soak in; repeat so that water is sure to penetrate to the depth of the seed.

### Germinating seeds

Seeds are living organisms and, with proper conditions, they will sprout to life. Seeds need moisture, warmth, and, in some cases, light to germinate (sprout). Once seeds sprout, these same factors are essential for healthy seedling development.

- **Moisture.** Be sure to keep the soil surrounding your germinating seeds moist, but not soggy. Check frequently by gently probing to the depth of the seed or young root to make sure the soil is moist below the surface. Water seedlings when they

need it rather than on a regular schedule. Gently sprinkle them regularly so they don't dry out. A spray bottle works well in the classroom.

- Once seeds have sprouted, have students test soil moisture with a finger, and water only when the top 1/2 inch of soil is dry.
- **Fertilizing.** If you use a rich seed starting mix, your plants may have all the nutrients they need to get established. However, if your seedlings start to fade in color or appear weak, you can add organic fertilizers once their first true leaves have formed. Be careful not to overdo it. The right amount of fertilizer will keep seedlings looking dark green (rather than pale yellow), but too much can be harmful. A good rule of thumb is to fertilize with half the recommended dose once every 10 to 14 days. Students may want to experiment to discover for themselves the consequences of too much of a good thing!
- **Warmth.** When starting seeds in the classroom, temperatures will usually not fall below the 60 degrees needed to germinate most seeds.
- **Light.** Most seeds germinate best in a dark, warm environment, surrounded by soil. There are a few types of seed that need light to germinate (check seed packets) and should be covered with little or no soil. Seedlings, or baby plants, grow best with 14 to 16 hours of light a day, much more than windows can supply in late winter. Seedlings grown on windowsills tend to be “leggy,” and therefore will generally grow better under fluorescent lights. To prevent stretched, leggy stems, the lights should be kept within a few inches of the top leaves.

## ***Transplanting***

### **Transplanting to larger containers**

If you planted many seeds in a container close together to save space, you will have to move or “prick” them out to individual containers with more space.

- Wait until after the first true leaves appear (after the cotyledons).
- Gently tease out closely planted seedlings with a Popsicle stick, or butter knife.
- Then transplant them to individual containers where they have more space.
- Lift seedlings by their cotyledons or leaves rather than by stem.

### **When are your plants ready to transplant?**

Your seedlings are ready to be transplanted when they have at least two sets of true leaves and their root system is established enough to hold soil around them.

### **Hardening off**

"Hardening off" refers to getting small seedlings accustomed to harsher outdoor conditions before moving them outdoors permanently. Do this by setting them outside for

progressively longer periods each day, starting with a few hours and increasing to a full day over the course of a week or so.

### **Transplanting pointers**

Transplant your seedlings into moist garden soil that is neither too dry nor too soggy. Ideally, it will be about as moist as a wrung out sponge. Refer to the planting guide or seed packet to determine the appropriate spacing of your plants.

- If your transplants are root-bound, with a large mass of roots at the bottom of the plant, gently break up the root ball before transplanting.
- Transplant your plants to the same depth that they were in their containers.
- Water transplants with many passes using a gentle spray, letting the water seep in between passes, or by trickling water directly around the base of the transplants.
- Water thoroughly so that the soil and water settles around the roots. Use your finger to make sure there is moisture at the depth of the roots. Unless directed otherwise, students may stop watering when they see that the soil surface is wet.
- Avoid transplanting during midday heat if possible.
- Protect your transplants from pests like birds by covering the young plants with upside down strawberry baskets, upside down nursery trays, netting or floating row cover (thin, lightweight fabric).

### **Tips for transplanting with kids**

- As with sowing seeds, you can have children measure the distance from thumb to pinkie on their open hand to use a spacing guide. We call this their “farmers’ measurements.” You can also have them measure and mark inches on their trowels to use as a garden ruler.
- For transplants that grow into large spaces (e.g., cabbages, lettuce) mark the spaces to be planted ahead of time with labels, sticks, or hand trowels. Students can bring out rulers or use their “farmers’ measurements” to help you map the bed. This will allow you to check the spacing and correct any errors before any plants have gone in the ground.
- To demonstrate why small plants need to be spaced so far apart, place 4” plastic nursery pots upside down in configurations to represent full-grown plants.
- Often times you have more kids than seeds or transplants to put in the ground. One way to ensure all students can participate in planting is to pair them up into “planting buddies” where one digs the hole and the other places the plants/seed in the ground and both cover with soil.