

Seeding and Transplanting

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

~ American saying

Seeding Outdoors

Direct sowing methods

Seeds planted directly in garden can be drilled (poked), broadcasted (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 with soil.
- **Broadcasting seeds** is a common method for grass or wildflower seeds. Broadcasting involves sprinkling seeds over the planting area and the covering 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 (removing plants that are too close together) 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 (watering can, hose fan attachment) that delivers a “gentle spring rain.” You may have to make 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 hang bird flash tape over your bed.

Tips for sowing seeds with kids

- Help younger students to properly space their plantings by using a sowing string (a string staked down with knots or tape marking where the plant should be planted).
- Another method: Before planting in the garden have children measure the distance from thumb to pinkie on their open hand and use as a spacing guide.
- You can also have kids measure and mark inches on their trowels and use it as a ruler.

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 pencil point, 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.

What crops are best started indoors and transplanted?

Plants that can tolerate root disturbance and will benefit from a jump on the season are best to start indoors. "Cool weather" crops such as broccoli, cauliflower, and cabbage can be set out up to a month before the last danger of frost in your area. "Warm weather crops," like tomatoes, peppers, and melons should be transplanted in to the garden after all danger of frost is past in your area. Flowers' planting requirements vary, so check the seed packets.

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. If caring for seeds directly sown in the garden is a challenge at your school (i.e., protecting them from pests, keeping seed bed watered), you can chose to start corn, beans, peas, squash, melons, and cucumbers in

containers, but you should do so in larger individual containers rather than the pricking out method described above.

Transplanting pointers

Transplant your seedlings into moist garden soil that is neither too dry nor soggy. 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 transplant's root zone.
- 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

- You can mark the spaces to be planted by setting the transplants on the garden bed, by marking the spaces with labels, or by pre-digging holes at the appropriate intervals.
- As with sowing seeds, you can have children measure the distance from thumb to pinkie on their open hand or to use a spacing guide. You can also have them measure and mark inches on their trowels to use a garden ruler.
- For transplants that grow into large spaces (e.g, cabbages, lettuces, etc.), you can place 4" plastic nursery pots upside down in configurations that create spaces for the plants to grow. This way, kids can visualize the space needed for a full-grown plant.

Seeding Indoors

Why start seeds indoors

Starting seedlings indoors allows students to observe plant germination and provides a more controlled (less hostile) 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.
- Paper pots are a resourceful container choice. Explanation in separate 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 when starting seeds 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 make your own seed starting mix by mixing 1/3 part horticultural sand, 1/3 part compost and 1/3 part coco pith fiber.

Planting seeds

Before planting, wet the soil mix completely so that it is as wet 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.
- A few types of seed 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 your seeds to the appropriate depth, water them with a gentle spray of water, let the water soak in and repeat so that water is sure to penetrate to the depth of the seed.

Germinating seeds

Seeds are living organisms and with proper conditions 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. It is best to 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.** You can begin fertilizing seedlings once their first true leaves have formed, but 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.** 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 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.

Additional Resources

- Victory Seeds has many resources related to seed starting and saving in their news and information link <http://www.victoryseeds.com>.
- Botanical Interests has many resources related to seed starting and saving in the gardening tips section. <http://www.botanicalinterests.com>.
- Organic Gardening is a great resource for growing and caring for your plants <http://www.organicgardening.com>.
- *Gardens for Learning*, 59 – 68