

Bronx Green-Up • THE NEW YORK BOTANICAL GARDEN



Bronx Green-Up, the outreach program of The New York Botanical Garden, provides horticultural advice, technical assistance, and training to community gardeners, school groups, and other organizations interested in improving urban neighborhoods through greening projects. At the heart of Bronx Green-Up are the community gardens of the Bronx and a compost education program.

Starting Seeds Indoors

Materials

- Seeds
- Seed-Starting Mix
- Seed-Starting Tray or Containers with holes in the bottom
- Wood or plastic labels (to write the type of seed and date planted)
- Bottom-watering Tray (A flat-bottomed tray without holes)
- Humidity Cover
- Watering Can and Spray Bottle
- Light (sunny window or fluorescent light)

Sowing Seeds

1. Moisten the seed-starting mix—it should be wet like a damp sponge.
2. Fill a tray or containers with the mix, making sure to fill each cell. Use an empty cell pack tray or your fingers to press down on the mix; be careful not to pack it too tightly. Run a pencil or ruler over the top of the tray so that the medium is level with the lip of each cell.

3. Prepare the seeds if necessary—some may need to be **scarified** or **stratified**. Follow the directions on the seed packet.

Scarification is scratching the seed coat so that it can more easily absorb water.

Stratification is exposure to either a cold or hot period. The instructions on the seed packet will specify the appropriate amount of time.

4. Using your fingers, make holes in the seed-starting mix of each cell to the correct planting depth, according to the seed packet. The general recommended depth is at least 2 to 3 times the width of the seed. Space the seeds as instructed on the seed packet.
5. Place your seeds into the holes and cover them with seed-starting mix to fill the holes..
6. Label your trays with a permanent marker. The label should include the type of seed, the date you planted it, and the day it germinates.

7. After everything is labeled, place the seed-starting tray into a second, flat-bottomed tray, one without holes. Fill this bottom tray with water so that the seed-starting mix absorbs the water from below. When the mix has absorbed the water and it seems saturated, empty out the excess water.
8. Place a clear plastic cover over the seed-starting tray to keep in moisture. Either place newspaper over the top of this humidity cover or place the entire tray in a dark location. Most seeds need darkness to germinate, and afterward they need light to grow. So remember to remove the cover once the seeds have germinated.
9. Make sure your seedlings receive sufficient light. This means 8-10 hours per day. It is best to provide supplemental artificial light. Standard fluorescent tubes work well if plants are kept within a couple of inches of the light source. You may also place your plants close to a sunny window if you have no fluorescent light.

Watering

Water plants from the bottom: Use a watering can to pour water into the bottom tray. Use a spray bottle to mist seedlings from the top. Use water that is at room temperature; cold water can slow the germination and growth processes. Keep the trays moist but not too wet.

Fertilizing

Do not fertilize your seedlings until they develop their first true leaves—those that resemble the leaves of a mature plant. Use just half of the recommended dose, and give these diluted feedings about every two weeks.

Seedling Diseases

The warm, humid conditions that promote germination and seedling growth are the same conditions that foster a fungal disease called **damping off**. This can happen if seeds or seedlings are over watered, too crowded, or poorly ventilated. When damping off occurs, the seeds tend to rot or the seedlings shrivel and collapse. If this happens, it's best to just throw them away and start over with new seeds. If you plan to use the same containers, sterilize them first to destroy all traces of the fungus. To sterilize, soak containers in a 10 percent bleach solution and scrub off any large chunks of dirt or debris. Allow the pots to air-dry before using them. To help prevent damping-off, or if you suspect that soil is the cause, you can use a barbecue grill or oven to heat the soil to a temperature of 140 degrees for a couple of hours to kill any disease spores.

Transplanting

Transplant seedlings to a larger container when they become overcrowded, which can make them weak, susceptible to disease, and unequal in size.

Getting Ready for the Garden

After the danger of frost has passed (in New York City this is generally by April 15), it is safe to transplant your seedlings into the garden. As they have been protected and sheltered indoors with warm temperatures, it is important to first acclimatize them to the outdoor temperatures. Keep the plants outside for two hours per day and gradually increase the time to a full day over the course of a week or so. This process is called **hardening off**.

Into the Garden

The day before transplanting the seedlings, water them well; this helps limit the shock of transplanting and ensures that your seedlings are turgid (sturdy). Also, remember that the seedlings are still fragile; transplant them in mild conditions—low light, mild temperature, and low wind.

Why won't my seeds germinate?

Most seeds will germinate if given water, an appropriate seed-starting mixture or soil (if sowing directly outdoors), and warmth. Most seeds also need complete darkness to germinate, but check your seed packet to be sure, as there are exceptions. However, here are some reasons why you might have trouble.

Water: Some hard-coated seeds such as morning glories, corn, and beans may need to be soaked in water to speed up germination. In addition, the seeds of many desert plants need to be immersed in water to remove an inhibitor that stops them from germinating during dry spells.

Soil or Seed-Starting Mix Conditions: Seeds may not germinate if the soil or seed-starting mix is too wet or too cold or has been allowed to dry out. Compacted soil or seed-starting mix also can prevent germination; this is why seed-starting mixtures usually contain light, loose materials.

Temperature: Most garden seeds germinate best indoors with temperatures between 65 and 75 degrees Fahrenheit. Annuals that come from tropical climates generally can germinate at any time. Plants from colder climates germinate in the spring and must go through a cold period. Alternately applying cold and warm temperatures encourages certain seeds to germinate. This process is called **stratification**.

Light: Some very tiny seeds such as lettuce need to be on the surface of the seed-starting mix or soil as they do not have the energy to push up through the medium; they will not germinate without light. The seed senses the light by a pigment called **phytochrome**.

Seed Coat: Some seeds have a very hard seed coat, which water can't penetrate. Sometimes you need to cut or nick the seed coat with a knife or with sandpaper. In extreme cases, like with the Kentucky coffee tree, sulphuric acid is used. The cutting of the seed coat is called **scarification**.

Viability: A seed may not germinate because the embryo is damaged or incomplete or the seed has been stored too long or under poor conditions.

Timing: Some large seeds such as acorns or horse chestnuts take a long time to germinate, sometimes up to two years. In the first year they produce a root, and in the following year cotyledons (seedling leaves).