



## Indoor Vegetable Seed Starting

Warm season vegetable crops such as tomatoes, peppers and eggplants are killed by frost. Additionally, they require both warm soil and air temperatures to steadily grow towards fruit production. Starting seeds for these crops indoors provides an opportunity to get a head start on a short outdoor growing season. Your jumpstart on gardening success is maximized with some effort and attention to details that produces vigorous, sturdy, short, dark green transplants.



**Select plant varieties that will do well in your garden conditions.** When you grow your own vegetable crops from seeds you will usually have more varieties to choose among than when you buy transplants from a nursery. Check out the Vegetable Varieties for Gardeners (VVG) web-based tool that compiles information from gardeners about what they are growing. You can search among 7,000 varieties including heirlooms and the latest hybrids with details on resistance to insects or diseases: <http://vegvariety.cce.cornell.edu/>

### Gather supplies.

- Buy fresh seeds from reliable sources. Consider a germination test on seeds saved.
- Purchase a lightweight soil-less seed starting mix that is sterile and weed free. Typically these commercial mixes contain peat moss, vermiculite and some perlite and fertilizers.
- Use containers that are about 3 inches deep with holes in the bottom for drainage. There are lots of possibilities from fiber pots and cell packs to yogurt cups and cut off milk cartons. Sterilize reuse containers with a 10% bleach solution.
- Even with a bright, unobstructed south-facing window supplemental light can be needed. Consider a four-foot long, two-bulb fixture with 40-watt cool white bulbs with a timer. Low-Cost Grow-Light Frame: [www.gardening.cornell.edu/vegetables](http://www.gardening.cornell.edu/vegetables)
- A thermostatically controlled heat mat designed for plants might also make achieving the required soil warmth for sprouting your specific seed easier. A soil thermometer might also be helpful.
- Use a watering can with fine holes or mister to deliver gentle watering.

**Do not start seeds too early.** Order your seeds in the fall to be certain the varieties you want are still available but err on the side of starting your seeds too late rather than too early in the spring. Small plants will catch up and surpass overgrown leggy plants that may never recover from being held in a pot too long. It ideal to plant warm season crops outside 2 to 3 weeks after average last frost when the soil has warmed and nighttime temperatures are consistently above 45°F. Start tomato, pepper and eggplant seeds about 6 weeks before your anticipated transplant date while cumpers, melons or squash are start only about 3 weeks before. Resources at this site will help you determine the chance of a 32°F occurrence in your area in the spring (last frost): <http://gardening.cals.cornell.edu/garden-guidance/weather-climate/>

**Read the seed packet for specifics on germination.** Generally, plant seeds 2 to 3 times deep as they are wide and 1 to 2 inches apart. Fill a clean container to the brim with moist soil-less mix and use a knife or finger to poke a hole to the proper depth. Alternatively, spread seeds on top and scatter layer of seed starting mix over them. Plant a few more seeds per container than needed as all may not germinate. Use a permanent marker on recycle plastic or wooden stick to label containers with at least the variety and start date. Some will cover containers with clear plastic wrap to seal in moisture. This strategy is not necessary but it is essential that the seedling mix is kept evenly moist. Water by misting or set containers into an inch of water for no more than an hour to letting them soak up as much as they can from below. Additionally, until seeds germinate, place out of direct sun in warm spot. Seeds germinate best in a constant soil temperature that is somewhere between 75°F to 90°F. Check your seed packet for specifics.

**After seeds germinate place in direct light.** If using lights keep them 3 to 6 inches away from emerging plants and on for 12 to 16 hours per day. Consider adding aluminum foil along the edge to reflect more light on plants. Keep the soil moist with delicate watering and maintain air temperature about 65°F to 70°F during the day (10°F cooler at night is fine). When plants have two true leaves, thin to one plant per pot or every 1.5 inches. Water with half strength weak solution of fertilize at this point.

**Do not be in a rush to get plants outside.** As mentioned above, plant warm season crops outside 2 to 3 weeks after average last frost when the soil has warmed and nighttime temperatures are regularly above 45°F. Additionally, prepare plants for the outdoor life by hardening them off for a week or two before transplanting. Reduce the amount of water they receive and increase their exposure to sun, wind, and cool temperature by placing them outside in a lightly shaded area for increasingly longer periods.



**Choose a still, cool, cloudy day to plant outside or plant late in day if sunny.** In a prepared area loosen soil and dig holes large enough to accommodate the root system and at proper spacing that is specified on the seed packet or in another resource. Carefully slide the well-watered plants out of their containers using the stem to place them in their holes. Tap the soil gently around transplants to achieve good root to soil contact. Keep soil moist for first week or two to allow seedlings to establish roots.

**Keep records of what you did and when you did it.** Your observations will be critical in fine-tuning your planting strategies and schedule in the years ahead to achieve success in producing the best vigorous, sturdy, short, dark green transplants.

**Published:** January 2015

**Image credits:** [Todd Heft via flickr](#) and [Eleanor Martin via flickr](#)

**Author:** Lori J. Brewer, Cornell Garden-based Learning, Horticulture, Cornell University

**Reviewer(s):** Cornell Cooperative Extension Master Gardener Volunteer Coordinators