



Growing your own transplants can be one of the most rewarding parts of the gardening experience. With just a little equipment and know-how, you can be well on your way to enjoying a lifetime of benefits and rewards. Some reasons to grow your own vegetable transplants include:

- Being able to enjoy the early part of the season when other gardeners are impatiently waiting for spring feels like a sneak peek into the growing season when temperatures will be warmer and the world, greener.
- Transplant production gives the grower much more control over crop varieties in their garden and the way those plants are grown and cared for.
- It can be challenging to find organically grown transplants commercially and garden centers will not carry the variety of plants that are available in seed catalogs or from seed saving initiatives.
- Plants from the garden center will also be lacking the special bond that is developed between grower and plant after nurturing and caring for them from seeds.

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## WHERE TO BEGIN

Starting with a plan will help make the most of your intensively managed transplant production space. A relatively high amount of inputs and resources are needed to produce high quality transplants. To make the most of those resources you will want to:

1. Make sure you know how many transplants you need of each variety. When creating a plan, start by determining the size of each of each planting and the appropriate plant spacing for your garden.

## CROPS TO TRANSPLANT

- Tomatoes
- Peppers
- Eggplant
- Broccoli



## CROPS TO BE SOWN

- Beans
- Beets
- Leaf Lettuce
- Carrots
- Corn



2. Then determine which crops should be directly sown and which should be transplanted (check out the list of suggestions to the left).
3. Once you have determined what crops you would like to grow as transplants, you should find out when it will be appropriate to plant them in the garden and how long it will take to grow into a high-quality transplant.
4. Then fill out a calendar or spreadsheet with target sowing and transplanting dates to help keep you on track.

## MATERIALS YOU WILL NEED TO GET STARTED

Growing transplants can be equipment intensive so you may have to invest in some new tools and supplies. However, there are lots of cost-effective options and endless opportunities for improvising or repurposing so costs can be kept down.

**SEEDS** are a great place to start.

It can be a fun activity to browse **seed catalogs** over winter months imagining the summer bounty. Your seed packets will have a lot of great information on them for any final adjusting or fine tuning of your crop plan.

There should also be **specific instructions** for achieving uniform germination, like how deep to plant the seeds and optimal soil temperature for germination. Remember though, most annual vegetable crops germinate easily so even if you can't adhere to the exact stated requirements, you should still give it a try; you will likely still have good results.

Also, keep an eye out for **community events** like seed swaps and visit the Garden Project's Resource Center. These are great places to get resources and tap into a wealth of local knowledge from other growers in your area.

**CONTAINERS** will also need to be made or acquired.

There are lots of options for growing containers. From plastic inserts and flats or containers made of biodegradable materials, these can all be purchased at garden centers or specialty grow shops. Many of the plastic options can be reused for several seasons. Importantly though, they will need to be **sanitized** annually to prevent the spread of disease and pathogens. Containers could also be made from egg cartons or other reused disposable containers. It is important to modify any homemade containers with **drainage holes** to prevent growing media from becoming over saturated.

Another option could be making **soil blocks** with a specialty soil blocking tool. The tool is somewhat expensive and soil blocks can be time consuming to make but by investing in one, you can eliminate single-use plastics from your operation and never need to purchase plastic flats or inserts again. Soil blocks are also less likely to become root-bound than plants grown in containers. They can provide a very efficient use of space.

**MEDIA** or potting soil is also a necessity for growing your own transplants.

There are many options available at garden centers and grow shops. It is best to use a **soilless blend** designed for seed starting and not regular potting mix. Potting mix you would use for container gardening may have large aggregates that could be frustrating to work with and could also make it difficult for seeds to germinate.

Most media blends are composed of peat moss or coconut coir, vermiculite or perlite, and possibly sterile compost or other nutrient amendments. **Sterility** is very important because delicate seedlings will have a difficult time out competing other fast-growing weeds or harmful pathogens.

**LIGHTING** is another important consideration.

Most likely there won't be enough natural light available by a window or door, so **supplemental light** will need to be provided. Seedlings that are not getting enough light will look stretched, thin and leggy.

There are lots of options available from expensive commercial grow lights to simple shop light, mounted to inexpensive shelving. When designing and building your light system, you will want to be able to adjust and control the height of the lights so that you can keep them about **four inches above your plants**.

The duration that they will be running should also be regulated. Most people run their lights for **14 to 16 hours** a day using a timer to control when they turn on and off. If you are using fluorescent lights, it is a good idea to mix the types of bulbs you use to provide the full spectrum of light.

The efficiency of lighting options is another consideration; running commercial grade grow lights or fluorescent lights can be expensive. There are many **LED bulbs** on the market that will work directly with existing fluorescent fixtures. They may cost more upfront but will last longer and cost less to operate.

**TEMPERATURE CONTROL** is also important.

Many growers make use of **heat mats** to bring the soil temperature up to the ideal germination temperature. Most seeds will germinate best if soil can be kept between **70° and 80°**. After germination has occurred, plants will grow fine at 60° to 70° but to get them to germinate quickly and uniformly at the beginning, it is important to warm up the soil.

To do this efficiently, heat mats should be used with a thermostat and soil probe thermometer. There should also be a layer of insulation underneath your heat mat to direct as much of the heat into the growing container as possible. It is also a good idea to use a portable probe thermometer to check the soil temperatures of all containers to make sure everything is being heated evenly.

**WATER** is maybe the most important resource you will be providing your transplants.

You will want to use a watering can or a sprayer that provides a high level of control, so you don't overwater or make a mess while watering. It is best to use **lukewarm water**, not cold, so that your soil temperature does not drop too much when watering.

While transplants are germinating on a bottom heat source, you will need to check the moisture levels of the media regularly. If possible, try to **water lightly** a couple times a day. The seed needs to remain moist to germinate but because it isn't tethered to the soil by a root, it may wash away if overwatered.

Many growers use clear plastic domes to ensure the media stays moist while plants are germinating.

After plants have grown roots, you can do heavier watering, less often. The media needs to **remain moist** without being oversaturated. Overwatered transplants will become weak and start to yellow or discolor from a lack of nutrients. Funguses and other harmful pathogens may start to populate the growing media and crops can be lost.

Depending on the crop and the growing media it may be necessary to periodically add **fertilizer** to your irrigation water for liquid feeding. There are plenty of options on the market that can be acquired at garden centers, grow shops or specialty online growing supply stores. Whatever option you choose it is important to follow the instructions on the label carefully. Over-fertilizing can severely burn or even kill an entire crop. There is a lower risk of this happening with many of the organic options that are available, such as fish emulsion.

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## Now that you have all the necessary materials to get started, WHAT OTHER CONSIDERATIONS ARE THERE?

**THINNING** will need to be done if you sow more than one seed per cell.

There should only be **one plant in each container**. You will want to start thinning before the plant's roots systems have a chance to develop and become intertwined. Thinning early will limit the amount of collateral damage done to the plant that will be kept for transplanting. If you have empty cells, you can transplant the thinned plant into cells where no germination occurred.



**AIR CIRCULATION** is another important consideration.

Air movement is important to help restrain the growth of fungi and pathogens that you don't want your transplants exposed to. It will also help the transplant's stems and leaves grow with more strength and vigor. Adding a **box fan** to your growing system can be an easy, cheap way to keep air moving.

**PEST CONTROL** measures, both preventive and reactive, may also need to be taken. When growing indoors, you have a high level of control over the cultural conditions of your growing environment. That control should be leveraged to prevent most pest infestation. Cultural controls include proper cleaning and sterilizing of growing equipment. Environmental controls are things like air flow, drainage, fertility, availability of water, and light.





The adage “an ounce of prevention equals a pound of cure” really holds up in most aspects of gardening. The most likely problem you would face in an indoor growing scenario is damping off. **Damping off** happens when young plants start to wilt and collapse, usually in a circular pattern.

This is caused by fungi and can hopefully be prevented by using clean equipment, sterile media, by providing proper air circulation and not over watering. Insects are less likely in an indoor environment but if there are issues, it is important that pests are properly identified before treating.

**HARDENING-OFF** is an important and often overlooked part of the transplanting process. Hardening off transplants is the process of gradually getting your plants ready for the conditions of the real world to help reduce transplant shock. It can be devastating to see plants raised and cared for from seeds die once they are brought to the garden because they weren't allowed to acclimate to life in the great outdoors first.



Hardening off takes from one to two weeks and requires plants be moved in and out of doors so they can be ready for wind, sun light, rain, temperature swings and other cultural conditions of life in the garden. While hardening off plants, you will need to use an outdoor space with some shelter from wind and direct, harsh sunlight. Keep an eye on the weather forecast to avoid setting delicate plants out in extreme weather. If it is forecast to be unusually cold or hot, or for high winds or rain to hit, simply keep your transplants in that day. The idea is to gradually expose the plants to the variability of the outdoor climate, so they become tough.

# HAVE FUN & ENJOY SPENDING TIME WITH YOUR FUTURE GARDEN!

Take advantage of community resources like those provided by the Allen Neighborhood Center and Garden Project and know that there really is no right or wrong way to garden. There are infinite possibilities and experimenting to explore those possibilities is part of what makes gardening so great.