

The Essentialist

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Seed Starting

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To forget how to dig the Earth and tend the soil, is to forget ourselves. - Gandhi**



Cotyledon

Seed Starting: Supplies - What You'll Need

Here are the basics of what you'll need to get your garden seeds started:

1. **Containers** - Either purchased pots or flats or containers you've saved, like egg cartons and yogurt cups. Any container that has holes in the bottom. This is easily done with a nail or a drill. Used pots should be cleaned and disinfected by soaking in 1 part bleach to 10 parts water. Some references use 1 part bleach to 9 parts water. A local greenhouse uses 1 part bleach to 3 parts water with no ill effects. You can also dip them in boiling water for several minutes. You will also need a bucket or shallow pan to mix the medium. **Note:** If containers are not sterile, there is a chance of **Damping -off**. This is a disease that could be in the soil and/or pots and causes the stem to die off at the soil surface.
2. **Potting Mix** - Seeds do best in a soilless mix where there are fewer inherent problems than with garden soil. There are many different recipes, yet most use Sphagnum peat moss, vermiculite, or perlite (sometimes both). You can also sterilize your own soil by baking small quantities in the oven at 200 F for one hour. This does have a down side.
3. **Seeds** - Your choice
4. **Labels/markers** - Trust me, you won't remember what's what
5. **Plastic Bags or Covers** - These will trap warmth and humidity where the seeds need it
6. **Water** - it is best to use room temperature water or warm water from the tap. A small mister or spray bottle works best. Using a bottom water tray will also help develop stronger and deeper roots.
7. **Light Source** - If you don't have a bright window, you will need some kind of florescent or high density plant light. Fluorescent shop lights also provide excellent results. For best results use a white light (shop) and a grow light. This will cover the light spectrum plants need, one warm and one cool. Incandescent bulbs are not advisable due to the amount of heat they give off.

Seed Starting: Preparing the Potting Mix

There are many good potting mixes available. Using a soilless mix rather than outdoor soil is preferable because potting mixes don't readily compact, don't contain weed seeds and don't have disease spores and other possible problems. In other words, seeds need a light, friable soil that will hold moisture. Also, since new seedlings don't require fertilizer until they sprout their first true leaves, you don't really need a mix with fertilizer already in it.

Recipe #1:

- 1/2 sphagnum peat moss,
- 1/2 vermiculite (expanded mica) or perlite (crushed volcanic rock).

Recipe #2:

- 1/3 soil,
- 1/3 peat,
- 1/3 perlite or vermiculite

Recipe #3:

- 1/3 compost,
- 1/3 peat,
- 1/3 perlite or vermiculite



*Potting mix ingredients;
photo by S. Janover*

Recipe #4 - for starting anything in the allium family (onions and leeks) it is best to use:

- 1/4 soil,
- 1/4 peat,
- 1/4 perlite or vermiculite,
- 1/4 sand.

NOTE: Vermiculite does retain more moisture than perlite. Neither have any nutrition value for the plants.

Loosen, mix and dampen the potting mix before you put it into your seed starting containers. It is easier to get a uniform level of moisture if you do it this way. Dampen the mix to the consistency of a rung-out sponge. It should be wet, but not dripping, with any dry lumps. This can be done the day before and allow the mixture to be room temperature. This puts less stress on the little ones.

****To plant a garden is to believe in tomorrow—Audrey Hepburn****

Seed Starting: Potting your Seeds

Now the fun begins.

- Fill the containers with the pre-dampened potting mix.
- Fill about 2/3s full and tap the container on the table top, to help the potting mix settle and eliminate air pockets.
- Don't pack down the potting mix.
- Gently firm with your hand or a small board.

Start Planting: Once you have your containers prepared, you can begin planting the seeds. Make sure you have your labels ready. Also, it is best to plant only one type of seed per container, to prevent any confusion.

- Remember – **DO not plant too soon.** In 4-8 weeks they will be ready to go into the ground. Ensure the last frost has passed and the soil will be warm enough.
- Read the seed packet for any special instructions. Some seeds may require a period of pre-chilling, scarifying or soaking.
- Large seeds – use a pencil to make individual holes, ½” – 1” apart.
- Small seeds – use a pencil to make shallow furrows, and sow as evenly as possible in those furrows.
- Fine seeds can be sprinkled on top of the potting mix. A salt shaker and/or a spoonful of dry sand can distribute the seeds more evenly.
- Use 1-3 seeds per container, since not all seeds will germinate and not all that do germinate will survive. You can thin extras later.
- Re-check your seed packet for information on how much potting mix should go on top of the seeds. Generally, the smaller the seed, the less you need to cover them.
- There are a few seeds, like lettuce, that require light to germinate and should barely be covered with potting mix.
- Some sources will say to use the moistened mix on top, some say to sprinkle dry mix and mist the mix.

And Water Again: Although the potting mix was pre-dampened, it is still a good idea to sprinkle some additional water on top of the newly planted seed. This insures that the top layer of mix won't dry out and it also helps to firm the potting mix and insure good contact between the seed the mix. Seeds must absorb 40%-60% of their weight in water to trigger germination.

Greenhouse Effect: Your seeds are now ready to be covered loosely with some type of plastic. This will help hold in both heat and moisture. You can place the whole container into a plastic bag or simply lay a sheet of plastic over the container. **Make sure the plastic does not touch the soil.** If you have special seed starting trays with plastic covers, use those. Remove the covering as soon as seedlings appear. Ventilation is extremely important, as there may be rooms that require a fan, to ensure proper air circulation.

****The most noteworthy thing about gardeners is that they are always optimistic, always enterprising, and never satisfied. They always look forward to doing something better than they have ever done before. –Vita Sackville-West*****

Heat: Move your container to a warm, draft free spot and check it daily. Most seeds germinate best when the temperature is between 65 and 70 degrees F. The top of a refrigerator or a water heater are a couple of locations that can be utilized. Also, you could consider purchasing heating mats specially made for germinating seed. Heating mats go under the potting containers and heat the soil from below. You will usually need to water more frequently when using heating mats. Caution: Only use heating mats certified for seed starting use.

Light and Air: In general, seeds will not need light until they emerge. They will need air circulation under the plastic or you will be encouraging mold.

Signs of Life: Remove the plastic as soon as you see a seedling emerging and move the plant near a sunny window or under fluorescent plant lights. If overhead plant lights are not being used be sure to rotate your seedlings at least once daily. Be sure the potting mix stays moist, but not wet.



cotyledon

First Signs of Growth: Once your seedlings begin poking through the soil, they will start to straighten up and unfurl. These are actually leaf-like structures, called ***cotyledons*** that are part of the seed and serve as food sources until true leaves are formed and the plant is capable of photosynthesis. At this point you should move your seedlings under a light source.

****Find the shortest, simplest way between the Earth, the hands, and the mouth—Lanza Del Vasto*****

Move into the Light: Your seedlings will need between 12-18 hours of light each day. This may seem extreme, but artificial light and even the low rays of the winter sun are not as intense as full summer sun. The best way to insure regular long doses of light is to attach your fluorescent or high intensity plant lights to an automatic timer.

True Leaves: As the seedling grows, the cotyledons will wither and what are called the first "**true**" leaves will form. This is when your seedling begins actively photosynthesizing. Since it is growing in a soilless mix, you will need to give it some supplemental feeding at this point. Use a balanced fertilizer or one high in nitrogen and potassium, to encourage good roots and healthy growth. If you use a mix with compost in it, this step is not necessary.



True leaves

Potting up: The seedlings can remain in their original containers until you are ready to plant them in their permanent spots. However it is common to move the seedlings into a larger pot once several sets of leaves have formed and the seedling are a couple of inches tall. This is called "**potting up**" and it allows the roots more room to develop. Three to four inch pots are good sizes to pot up to, allowing plenty of room for root growth. When potting up (same with transplanting) handle the plants by their leaves or the root ball. Avoid grasping the plant by its stem.

Thinning: If more than one seedling is growing in the same pot, either separate the seedlings into individual pots or cut off all but the strongest seedling. Don't try to pull out the extra seedlings, since this might hurt the roots of the seedling you are keeping.

****As long as one has a garden, one has a future. As long as one has a future, one is alive. -Frances Hodgson Burnett*****

Seed Starting: Hardening Off

By the time the temperature warms outside, you should have stocky, healthy young plants. Before moving them out into the garden, take a week or two to gradually introduce them to their new growing conditions. This is called **hardening off**. It gives the plants a chance to acclimate to sunlight, drying winds and climate changes.

- At least 2 weeks before transplanting time, water less frequently and withhold fertilizer. This is another item that there is disagreement on. Some say hold nutrients back (because of less water). Some say do not withhold nutrients because it may reduce the amount of photosynthesis.
- A week before transplanting move the plants outside to a spot protected from strong light and wind.
- Gradually increase the amount of time they spend outside and the amount of sunlight they receive until you see that they are growing strong and appear ready to go out on their own.
- Within a week the plants should be outside permanently.
- They will also need more water due to wind and sun.
- Bring them in or cover them if the temperature looks like it will dip, or a severe storm is possible.
- Water your seedlings well before and after transplanting and try not to transplant during the hottest, sunniest part of the day. The optimum conditions is a cloudy day, either early AM or late PM.

Seed Starting: Transplanting

- Wait until weather conditions are right. Possibility of last frost has passed and soil temperatures are at least 50 degrees. The soil temperatures are the key to a successful transplant.
- General rule of thumb - when a seedling has 3-4 true leaves, it is large enough to plant (after hardening off). High quality transplants should be mid-sized, have a healthy, green appearance, and not be tall or leggy. It is best if they are not flowering – they can lose their blossoms and be stressed more if flowering. Be sure no insects or disease is evident.
- Water your seedlings well before and after transplanting and try not to transplant during the hottest, sunniest part of the day. The optimum conditions is a cloudy day, either early AM or late PM. This is repeated to emphasize the importance of watering before and after transplanting.
- Have the planting bed prepared including, digging the appropriate size hole before removing the plant from the container (this minimizes the time the roots are exposed). Set the plant into the ground at about the same level that it was growing in the container.
- The exception is Tomato plants. These can be buried up to their first set of leaves. If you can't go deep – think horizontal (trenching).

****The greatest gift of the garden is the restoration of the five senses. ~Hanna Rion****

- Gently and carefully work from the bottom and sides to loosen and separate the plant from its container. Turn the plant upside down and gently tap the bottom of the container, slide the plant out carefully.
- If using peat pots – break away sides and bottom, also loosen soil with fingers. Always bury the peat pots so the tops are under ground.
- Always handle the plants by their leaves or by the root ball. Avoid grasping the stem, think neck and young and delicate.
- Try not to disturb the soil surrounding the plants roots and leave the root ball intact.
- Since the plant is not accustomed to seeking out its own water – add a cup of starter fertilizer, one that is high in phosphorous.
- Expect the unexpected – have frost protection available, milk jugs with tops cut off, sheets, Remay, coffee cans, or cloches. Anything, to protect the plants from the nastier elements including sunburn.
- Stand up – look around, pat yourself on the back for a job well done. Get something cool to drink and go relax. There will be weeding to do tomorrow!!!!

Subject section title

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