



Starting Seeds Best Practices

Resourced by
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Starting Seeds Indoors

Starting seeds indoors has many benefits, including an earlier harvest. While some crops can be direct seeded, you can start them indoors and move up the harvest date.

Another perk of starting seeds indoors is the ability to grow long season crops in short season climates. If you have to wait for outdoor soil to reach the optimal temperature, you'll miss out on growing days. But by starting seeds indoors and transplanting them when the time is right, they'll have a head start on growing

Supply List

Seed starter soil

Heated seed mat(s)

Seed trays

Humidity domes

Containers with drainage holes

Grow lights

Waterproof pen

Labels



A good starter soil should look like this

Important Announcement

A good starter soil can be purchased or made by you. The soil needs to be sterile...free from soil-borne fungus, bacteria, insects and weed seeds. This gives your seedlings the very best chance at a healthy start. A starting mix also has excellent drainage which helps keep seedlings from getting oversaturated.

Basic Seed Starting Mix

- 2 parts sphagnum peat moss OR coconut coir – for moisture retention
- 2 parts finely sifted finished compost, vermicompost or a blend – for nutrients
- 1 part perlite – for drainage and to reduce weight
- 1 part vermiculite – for drainage, moisture retention and to reduce weight
- For each 1 cubic foot of peat moss used, add 1/2 cup (6.5oz.) finely ground dolomite lime to balance the acidity of the peat moss.
- For each 1 cubic foot finished mix, add 1/4 cup balanced, organic slow release fertilizer (such as 5-5-5).

Dry Soil

One mistake many beginners make is to plant seeds in too-dry soil, then add water, expecting that the soil will uniformly disperse the water throughout. Sadly, it doesn't work that way! Instead, the water will pool on the surface and often run down the side of the container, never even reaching the newly-planted seed! The fix



Pre-moisten Soil

Start your seed planting process by pre-moistening the soil. To do this, put the soil you are going to use (or part of it) in a container with extra room for mixing. Don't add too much water at once: gently sprinkle the surface of the soil with water, mix it in, then repeat the process until the soil is uniformly moist. You want it to be moist, but not wet. Roots need a combination of moisture and air to thrive; make sure not to overdo it to the point of oversaturation. Now the soil is ready for seeds!

What your other supplies look like...



Seedling Tray and Humidity Dome



Labels and waterproof pen



Heating Pad



If you don't want to purchase a seed tray, you can make your own!

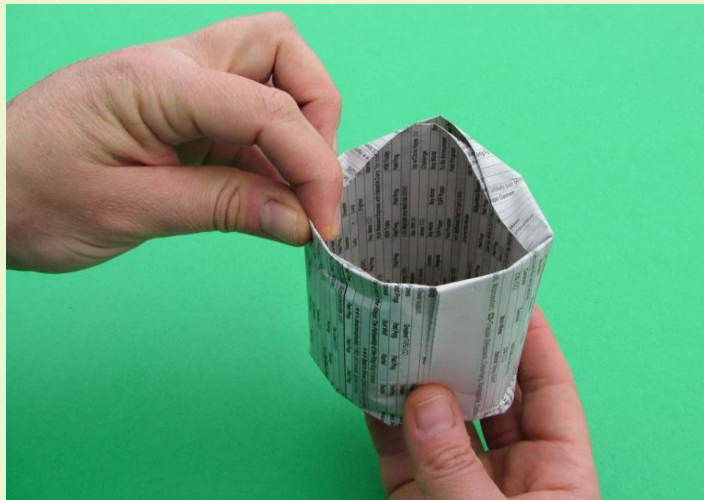
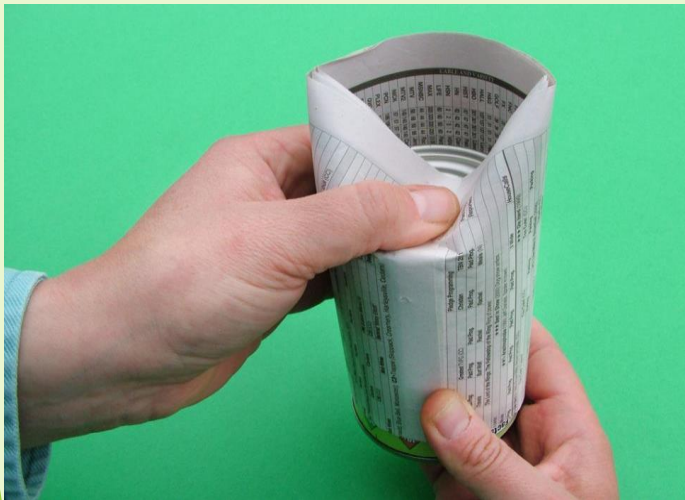
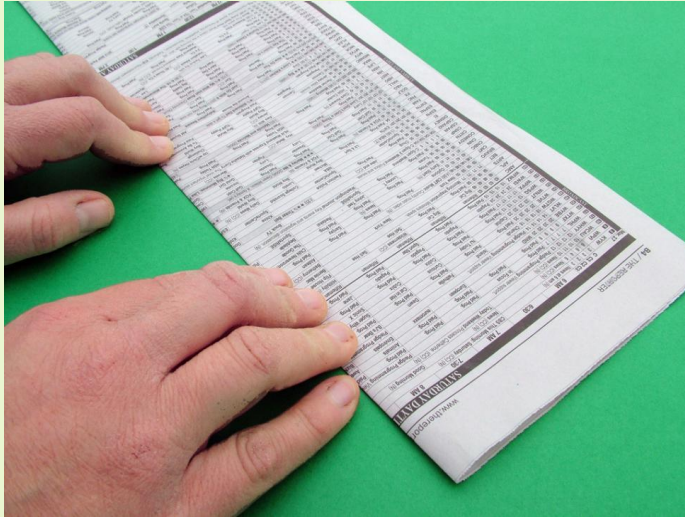
3 Earth Friendly choices:

Newspaper cups

Cardboard egg cartons

Eggshells

Making a newspaper cup...



Use only the black and white print if possible.

No need for drainage holes because it's porous.

Can be planted directly into ground.

Fill your newspaper pots with soil mix.

Place in a waterproof container.



Cardboard egg cartons...

You can plant your seeds in the egg carton without cutting it apart until your seeds have sprouted. However, cutting it apart in the beginning helps to prevent your roots from getting tangled later. It also keeps you from accidentally crushing or breaking sprouts while trying to separate the cups later. Place egg cups on/in a waterproof container.

Fill your individual egg cups about half full with the soil mixture. Keep the recommended planting depth in mind. You should be able to find this information on your seed packets. Some seeds will need to be planted deeper, so add less soil during this step for those seeds.



Eggshell pots...

Easy to make! Just add a drainage hole in bottom.

The egg carton can serve as the tray...just place in/on a waterproof container.

Fill ½ full, depending on seed planting depth, then add more soil mix.



Any number of household items can be used to start seedlings. Just keep in mind the ease of making and use.

The 3 previously discussed can be easily transplanted into a bigger container, if necessary, or directly into the ground.

Just make sure that whatever you use is no more than approximately 3" tall, you have or create drainage holes and you have a waterproof tray to place in.



Paper tube
4 cuts, then fold over



Timing

When you're planning to transplant your seedlings outdoors, your timing for starting them is very important. Things you will want to consider: How long will it take them to grow to transplant size? Will it be warm enough outside by then? Will the season last long enough for them to reach maturity after planting outside? These are all excellent questions, many of which you can find the answer to on the back of a seed packet or by doing some research.

Google is your friend

The planning also includes determining your zone and what you want to plant.

The following 2 frames may serve as guidelines to help you with planning and planting.

First Seeding & Transplanting Dates for Vegetables in NY

As early as garden may be worked in spring or about April 15.	After the date of the last average frost in Ithaca area (May 14).	After the soil has become warm in spring-June 1.
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Beets
 Broccoli (x)
 Brussels Sprouts (x)
 Cabbage (x)
 Carrots
 Cauliflower (x)
 Celery (x)
 Endive
 Kale
 Kohlrabi
 Leeks
 Lettuce
 Mustard
 Onions (t)
 Parsley
 Peas
 Radish
 Swiss Chard
 Spinach
 Turnips
 Rutabagas

Beans
 Eggplant*
 Pepper*
 Popcorn
 Potatoes
 Sweet Corn
 Tomatoes*

Basil
 Cucumber
 Muskmelon*
 Okra*
 Pumpkins*
 Squashes, Summer
 Squashes, Winter*
 Watermelon*

** Indicates variety is transplanted*
(x) Indicates variety may be transplanted or seeded. If transplanted probably should be later than date given.
(t) Indicates variety may be transplants, sets or seed.

Vegetables

Artichoke	DS	Lettuce	I/DS
Arugula	I/DS	Mache	I
Asparagus	DS	Mesclun	I/DS
Bean	I/DS	Melon	I/DS
Beet	DS	Mustards	I
Bok Choy	I	Okra	I/DS
Broccoli	I/DS	Onion	I/DS
Brussels	I/DS	Parsnip	DS
Cabbage	I/DS	Peas	DS
Carrot	I/DS	Peppers	I
Cauliflower	I/DS	Pumpkin	I/DS
Celery	I	Radicchio	I/DS
Collards	I	Radish	DS
Cress	I	Rhubarb	DS
Cucumber	I/DS	Rutabaga	DS
Eggplant	I	Shallot	DS
Endive	I/DS	Spinach	DS
Gourds	I/DS	Squashes	I/DS
Kale	DS	Sweet Corn	DS
Kohlrabi	DS	Swiss Chard	DS
Leek	DS	Tomatillo	I

Tomato	I
Turnip	DS
Zucchini	I/DS

Herbs

Basil	I/DS	Savory	I/DS
Borage	DS	Sorrel	DS
Chervil	I	Tarragon	I/DS
Chicory	DS	Thyme	I
Chives	DS		
Comfrey	I/DS		
Coriander	I/DS		
Cilantro	I/DS		
Dill	I/DS		
Lovage	I		
Marjoram	I		
Oregano	I		
Parsley	I/DS		
Rosemary	I		
Sage	I		

Key:

I = Start Indoors

DS = Direct Sow


Seed Depth

Take a look at the back of your seed packet to see how deep they would like to be planted. Generally speaking, the bigger the seed the deeper you plant it. Most seeds need darkness to germinate, but others need light and are just left on the surface of the soil. Make sure to find out what's best for your particular seeds.

Carefully follow instructions. Doing so will allow for any possible troubleshooting if seeds fail to germinate.

Keep track of the number of seeds in each pot as well. Keeping a journal of your journey will aid in future seed starting.



www.GrowOrganic.com  Item # SNV8186

Tomato - Beefsteak

Lycopersicon lycopersicum Tender Annual

Indeterminate. The vigorous vines of this popular beefsteak produce flat, meaty, juicy, red, medium-size fruit ranging from 10 ounces to 2 pounds. This great slicing or canning tomato has rough, ribbed skin with a richly flavored flesh.

Soil and Water: Tomatoes love fertile soil rich in organic matter. Add plenty of compost prior to planting. Soil pH is preferred between 5.5-7.0. Soak the soil 4"-6" deep at 7-day intervals.

Planting and Growing: Sow seeds in flats 6-8 weeks before the last frost and thin to 2" apart after the first true leaves appear. Before transplanting after the last frost, harden off the plants by placing them outdoors for a few hours to start, increasing the amount of time each day until they are accustomed to a full day of sunlight.

Harvesting and Storage: Harvest when individual fruits give slightly under finger pressure; the shoulders may not have changed color yet.


Did You Know? Research shows that protective effects of tomatoes against prostate cancer and cardiovascular disease result from the synergy of lycopene with other phytonutrients naturally present in whole tomatoes. Lycopene is highest in organically grown tomatoes.



Packed for:
2016
Approx:
50 Seeds



Printed with vegetable based inks.

Soil Temp. 70-85°F
Planting Depth 1/2"
Germination 6-12 Days
Height 3'-5'
Maturity 62-115 Days
Sun/Shade 
Spacing 15"-36"

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Everything a
gardener needs to
know!
More often than
not,
there is a toll-free
number for
further
assistance!

Step by step

1. Pick a method of planting seed.
 - a. Poke holes with the eraser end of a pencil, drop in seeds to the appropriate depth (check the seed packet), then carefully fill over the hole with soil, and tamp gently with the end of the finger to firm soil.
 - b. Fold a file card in half, place several seeds in the crease of the file card, and push seeds off the card into the hole with a toothpick.
 - c. Shake them directly from the seed packet.
 - d. Mix tiny seeds with used coffee grounds. The mixture can be put into an empty spice shaker container.
 - e. For limited vision, a magnifying glass can be used.
2. Regardless of your planting method, you should place two - three seeds per container, spacing them evenly, since some will likely fail to germinate.
3. After planting, mist lightly to settle the soil.

Labels



2 inexpensive labeling techniques:
repurposed popsicle sticks or any plastic
container.

Of course you can always purchase
reusable labels.



It is vital that you
label all of your
plantings with name
AND variety. Seedlings
may look alike when
small.

News Flash...

The 3 most important things your seedlings need:

proper air flow

adequate light

a consistent temp. between 68-80° F

Watering

Water by misting or set containers into an inch of water for no more than an hour to let them soak up as much as they can from below. If you water from the bottom, the soil will act as a sponge lifting the water to the seeds. This encourages roots to grow downward. Watering from the top can cause soil compaction and lead to plants developing roots that are weak and shallow.

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.

Seeds need to be kept moist in order to germinate. One way to greatly increase your chances of success is to cover your seeds with a humidity dome until they've sprouted. Make sure there is also air flow, without circulation seedlings can suffer from fungus and mold issues.

Humidity without a Dome

Generally, the relative humidity of the air should be 95%. Some growers find that a twice daily misting with a spray bottle is sufficient to accomplish this. That schedule also provides for a chance to check on the status of starts. Again, ventilation is also important to prevent fungal diseases and other issues that come along with high levels of moisture.

Warmth

A consistent temperature is one of the most important factors for seedlings to sprout, and that's where a heat mat comes in.

Heat mats are used to help grow vegetable seeds. Especially when you're trying to grow seeds in a colder room, such as the basement or an unheated greenhouse, the heat mats will help your seeds to germinate.

There's no data that suggests heat mats influence plant growth in the long run. A heat mat will help you optimize the germination process and increase your chances of success.

When you have a heat mat with a thermostat, you set it to the desired temperature, and you are done!

Good Lighting

When your seeds germinate, there's nothing like the real thing. Try to find a spot for your seed-starting in a bright window. Keep in mind that the direction the window faces makes a big difference! Window direction in order of desirability is: south, east, west, north.

Even though south-facing is the best light, keep an eye on seedlings in those windows. Sometimes the glass can cause the sun's rays to be too harsh for sensitive seedlings at certain times of day. If this seems to be the case, move them back a few feet or add a sheer curtain to solve the problem.

Keep an eye on west-facing windows for the same reason. Sometimes afternoon light can be a bit strong, supplemental light might be needed.

Morning sun in an east-facing window should work well, but supplemental light will probably be needed.

With north-facing windows you will certainly need supplemental light, but the seedlings will still appreciate the addition of indirect sunlight.

More Light Info

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 fertilizer at this point.

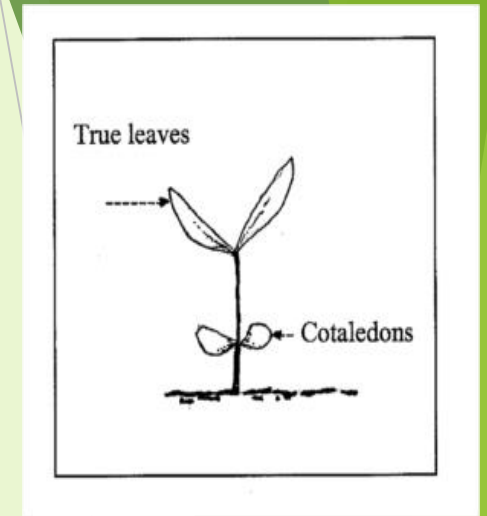
Fertilizing

The seed will provide sufficient nutrients until the seedling develops its first set of true leaves. The true leaves are a sign that the seedling has used up its store of nutrients in the seed and will require outside fertilization. Once the first true leaves appear, water with a half-solution of fertilizer; you can use a water-soluble all purpose plant food or organic fertilizer such as fish emulsion. Fertilize only once a week. Water as needed the rest of the week. As the seedlings grow, gently wave with your hand to "mimic a gentle breeze." This will help strengthen the stems and prevent excessive stem elongation (leggy plants).

Thinning Out

As soon as your seedlings have developed at least one set of leaves, you need to provide them more room. If you have planted them in individual pots or cell packs you can take a pair of sharp scissors and simply snip the smaller plants, leaving only one plant, the strongest and healthiest plant.

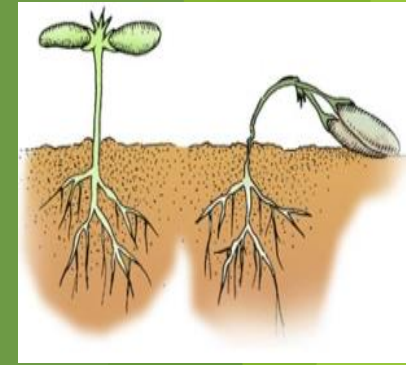
A second option is to gently separate the small plants with a clean knife or plant label. A good tool for separating seedlings is a small cocktail fork. Gently ease the seedlings apart, being careful to avoid tearing the roots in the process. Then repot the seedlings in a slightly larger pot. Handle small seedlings by their leaves; those small, thin stems break easily. Failure to thin or transplant crowded plants can result in spindly seedlings that may not develop properly.



Most Common Problem: Damping Off

If your seedlings suddenly collapse and die, one of the fungal diseases called "damping off" or "seed and seedling rot" may be to blame. In one type of damping off, the seedling's stem collapses at or near the soil surface; in another type, the seedling rots before it emerges from the soil, or the seed decays before it even sprouts.

To prevent these problems, use pasteurized soil mix and new or thoroughly washed and disinfected containers. Try using seeds treated with a fungicide. Take care not to overwater seedlings; be sure to provide good air circulation and ventilation, so tops of seedlings stay dry and standing moisture is kept to a minimum. Thinning seedlings to eliminate crowding is also helpful.



Next Step...Potting Up

Think ahead...if your seedlings start to outgrow their accommodations, but it's still too cold to go outside, you may need to give your seedlings more space to grow before transplanting outside. A 4" pot is usually a good size to pot them in.

Another reason to pot up is if your seedling is getting root bound (something you should definitely be watching for!). Plant health is directly tied to root health. As roots grow larger, they need more water and more nutrients such that will benefit from a slightly richer, heartier soil.

Using a high-quality organic potting soil is recommended. If necessary, because you are potting up less established seedlings with thin fragile roots, you can add about 60% fluffy organic potting soil to 40% of your starting mix. That way, the tender roots meet with less resistance when trying to grow.

Repotting 101:

- Gather all your materials (pots, potting soil, tags, waterproof marker, butter knife) first so that repotting is quick and efficient.
- Water seedlings before starting. Moist soil will cling to the roots, protecting them from damage and drying out.
- No tugging! Don't pull the baby plants from their cell flats or plug trays. Use a butter knife, narrow trowel, or even just a long nail to prick the seedlings from their containers.
- If there is more than one seedling in your container, gently tease them apart for repotting.
- Place them in the new pot, lightly tamping the soil.
- Have a stack of labels ready to go and give each pot a fresh tag. Alternatively, use a waterproof marker to write the name of the plant on the side of the pot.
- Water with a diluted liquid fertilizer to settle the roots in the new soil and encourage healthy growth.

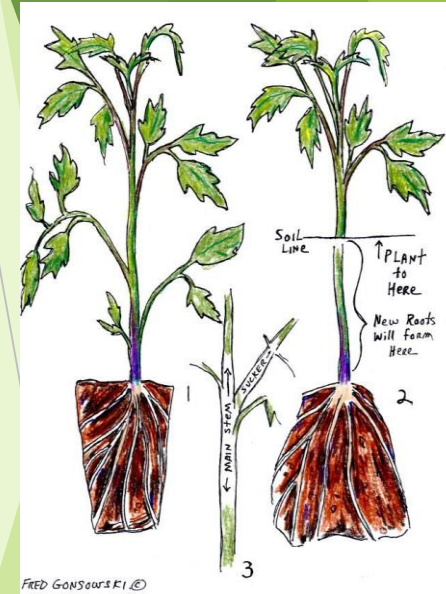


Repotting FYI...

If the seedlings have gotten a bit tall and leggy, it is okay to plant most kinds of seedlings deep, piling soil up around the stem and burying it a bit. This is totally safe (and even preferred) for tomatoes. You could also do this for other members of the nightshade family, including peppers, potatoes, and eggplant. Brassicas (the cabbage family, including kale, broccoli, and collard greens) can also handle a little burying.

Other types of plants may not like this practice. The now-buried stem could rot and kill the plant. This is particularly true for beans, so keep the soil line about the same as it was previously. You should also avoid burying seedlings that are still very small and tender, regardless of their variety.

To avoid the need to bury seedlings and therefore any risk of rotten stems, the best practice is to prevent leggy seedlings in the first place. To do this, provide ample light and other ideal seed-starting conditions.



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Hardening Off

Before transplanting seedlings into the garden, it's important to condition the plants for outdoor conditions. This conditioning is achieved by hardening the plants. Hardening is the process of gradually acclimating tender plants to the outside environment. Harden the plants two weeks before transplanting by moving them into a shaded area outdoors such as a porch or under a shrub.

Then, move them gradually to sunlight for a short time during the day. Slowly increase the length of exposure time. Do not expose the seedlings to freezing temperatures or strong winds. Reduce watering, but do not let the plants wilt. After proper hardening, carefully transplant the plants into the garden.

That's all Folks!

Hope this was helpful! Happy Planting!



Cornell University
Cooperative Extension
Fulton and Montgomery Counties

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