

Seed Starting

Why grow from seed?

For the fun of it
To grow plants you can't find in the store
To grow healthier plants than you can buy
Be assured of sustainable growing methods
To save money

What do seeds need?

Soil (growing medium)
Moisture
Heat
and some need - Light

Supplies:

1. Seeding medium: Buy or mix your own soil-less starting medium.
2. Use sterile containers. These should have holes for drainage. Buy new, or sterilize old ones in a 5-10% bleach solution.
3. Trays or flats to place the containers in. These should not have holes.
4. Grow lights. 4' shop lights on chains with ordinary fluorescent bulbs work well. Windows usually don't provide light of the proper intensity or duration and may be too drafty.
5. Heat mat (optional). Many seeds need 70 degree or higher temps to germinate. If your basement is cool, a heat mat provides bottom heat just until the seeds germinate. You could also use a warm spot in the house, such as the top of the refrigerator.
6. Newspaper or paper towels, masking tape or other labels and marking pen.

Timing: When to Sow

Read the seed packet. Find out when the average last frost date is for your area and figure backward.

e.g.: Blue Salvia : "start seeds 6-8 weeks before last frost." For Madison area, May 20th is considered safe, although some people wait until Memorial Day weekend to plant frost tender plants. Six - eight weeks before May 20 would be March 25 - April 8.

Seed Pre-treatment:

Some seeds need special treatment to get them to germinate. This is indicated on the seed packet.

Scarification: The physical or chemical treatment given to some seeds in order to weaken the seed coat sufficiently for germination to occur. This is done by nicking the seed with a knife or file, soaking the seed overnight in warm water or, sometimes, both.

Stratification: The act of exposing a seed to a cold period in order to encourage germination.

Inoculation: Using a premium mycorrhizal inoculants to stimulate the root growth.

Two methods to start seedlings in containers.

- Indoor method under lights. Works best for seeds needing warm germination conditions.
- In containers outdoors, aka "winter sowing." Works best for seeds needing an extended cold period to germinate.

INDOOR METHOD:

1. Prepare a batch of soil-less mix by mixing in a little warm water. Use just enough water for it to feel like a damp sponge. It should not be dripping wet and you should not be able to squeeze water out of it.
2. Decide whether you want to sow a few seeds into each small container and thin them to one seedling per container or sow a large batch in a big container and transplant them later into individual containers. Fill the sterile containers to the top, firm it gently, but don't pack it in, and smooth off the top.
3. Sow the seeds. Seed packets indicate how deep to sow seeds. Many will say to sow on the surface, because these types need light to germinate. Gently press these onto the soil surface to get good contact between the soil and the seed. Other will say to 'just cover.' For these, a light sprinkling of dry soil-less mix on top of the seeds followed by a light misting with a plant mister or spray bottle works well.
4. Place the containers into the tray or flat.
5. Label with plant name and sowing date.
6. Cover the containers with plastic wrap or use a clear dome cover to keep the soil moist.
7. Place the tray of containers under a fluorescent shop light hung so that the light is about an inch above the container. Duration of light is important: 16 hours per day is good. Use an automatic timer. Use a heat mat under the flat if the temperature requirement for germination is 70 degrees or higher.
8. Watch closely for germination and remove the plastic wrap or dome as soon as germination has occurred. Get the containers off the heat mat as soon as germination occurs also.
9. Do not allow the containers to dry out. Pick one up, if it feels light, place it in a shallow container of water and let the soil absorb water again. Watering from the bottom helps prevent damage to tender seedlings and encourages deep root growth, but don't let them stand in excess water.
10. The first seedling "leaves" (or leaf) will be the cotyledons. The next leaves will be different, and resemble the leaves the plant will ultimately have; these are called true leaves. When the seedling has two sets of true leaves it is big enough to transplant into its own container. This is called pricking out. Get your moistened soil ready in the new container and make a hole with your finger or a pencil to receive the new plant. Gently loosen and pry upward on the seedling roots with the tip of a pencil, a screwdriver or small fork. At the same time, with your other hand, carefully grasp one of the leaves and pull the seedling out of the soil. Gently place it in its new container and firm the soil around it. Most seedlings are pretty sturdy. Just don't handle them by the stem. If you damage the stem, no more seedling. If you accidentally pull off a leaf, the plant will continue to grow. If you don't want to prick out seedlings sow only a few seeds per container and pinch out the weaker ones or use a small scissors to cut them out. Don't pull out the extras, because you may disturb the roots on the seedling you want to keep!
11. Place the transplanted seedling back under the lights, keeping lights 1-2" above the plants, raising lights as they grow (hence the chains). Again, duration of light is important: 16 hours per day is good. You can use an automatic timer if you'd like.
12. After they have been transplanted, you may choose to fertilize them with a liquid organic fertilizer at half strength what you'd normally use on a plant.

Some special considerations:

Seedlings that transplant poorly:

This will be indicated on the seed packet. Start these in individual peat pots OR other bio-degradable pots, a few seeds per pot, and thin out the weaker ones. Plant the entire pot in the garden.

Seedlings that need dark to germinate:

Put the container in a dark closet, or cover first with plastic wrap, then with folded newspaper.

Hardening off: getting your seedlings used to the harsh outdoors.

About a week to 10 days before your planting date, place the tray of seedlings outside, out of the wind and sun for a few hours. A shady, protected spot is best. Protect from cold temperatures and frost. Gradually expose the seedlings to more sun and wind. A little hoop house enclosure also works well. Some people put them on a tarp and pull them in and out of a garage. You can also use a cold frame if you have one.

Basic Soil-less Potting Mix

4-6 parts Sphagnum Peat Moss or Coir
1 part Perlite
1 part Vermiculite

Basic Mix with Compost

2 parts Compost
2-4 parts Sphagnum Peat Moss or Coir
1 part Perlite
1 part Vermiculite

Basic Mix with the Addition of Nutrients

Add ½ cup each per every 8 gallons of mix:

½ cup Bone Meal(Phosphorous)

½ cup Dolomitic Limestone (Raises soil pH and provides calcium and magnesium)

½ cup Blood Meal or Soybean Meal or Dried Kelp Powder (Nitrogen)

OUTDOOR METHOD: WINTER SOWING

The idea is to make mini-greenhouses out of containers with see-through lids. You sow seed in the winter, and place the containers outdoors, where the freeze-thaw cycle will cause the seeds to break dormancy and emerge at the proper time in spring.

1. Use old clear plastic clamshell containers such as cookies or take-out salad come in, or any container with a transparent lid.
2. Use a hot knife to make about 1-inch slits in the bottom (for drainage) and top (for transpiration); about six slits top and bottom.
3. Fill container with damp starting medium.
4. Sow seeds. Try to do this thinly, unless you want to prick out plants into individual pots later on.
5. Close the container and fasten with duct tape or binder clips. Label a piece of tape with the seed name and stick it on the side or bottom of the container (otherwise the ink will fade in the sun).
6. Place the container outside. If it is very cold outside (below zero) put it in the garage first to acclimatize the seed. Sudden freezing doesn't give the seeds time to adjust. Then place out of direct sun outdoors where the wind won't flip them over.
7. Wait for the seedlings to emerge in spring. This will usually happen while it is still very cold at night but the seedling do just fine. About now check to see if they need watering. Just soak the whole container in shallow water until it looks moist again.
8. When they have two sets of true leaves, you may need to thin them, or prick out into individual pots if you sowed thickly, or if you want to be able to give plants away. But the whole winter sowing idea is to use cheap containers and a lot of them, (since space isn't much of an issue outside), allowing you to sow thinly and not have to prick out.
9. As they grow, start fertilizing with half-strength liquid fertilizer.
10. Leave the covers open more to harden them off, or enlarge the slits until there is more hole than container (but then you can't re-use the lid next year). You can transplant seedlings directly into the garden.