

Starting with Seeds

You thought about it previous years but it seemed like so much work. You "make do" with the seeds you can simply plunk in the ground or the plants you find at the nursery. So why would you want to start your own seeds indoors? We can give you three very good reasons. First, you have a greater selection of cultivars than most local nurseries provide. Where could you possibly find an 'Ananas Noire' tomato plant, and okra plants aren't that common either. Seed catalogs provide great winter entertainment for serious gardeners. Be sure to try something new.

Second, starting from seed is the best way to extend your growing season. Tomatoes, peppers, and eggplants must be started indoors long before the growing season starts here in the Pacific Northwest. The third reason is that you will have a lot of fun. It isn't that difficult and you will soon be chatting with your friends about your wonderful plants. You might even be willing to share (but tell them not to count on it).

What You Need to Get Started

You will need containers to grow your seeds in. The container must drain well and should be wide and flat (about 2" deep). Plastic pots work better than clay pots since they retain moisture more consistently. You can use empty yogurt or margarine tubs if you poke holes in the bottom for drainage. Cell packs work very well and can be reused for many years. Used containers must be thoroughly washed and sterilized in a 10% bleach solution (one part bleach to nine parts water) for 15 minutes.

You will need a "soil" medium for starting your seeds. Using plain garden soil or even purchased potting soil is not advisable as it is not "fluffy" enough for the tender seedling roots and shoots. Purchase a mix designed specifically for seed starting. It will be sterile, lightweight, and free of weed seeds. Any nursery will carry at least one brand of seed starting mix.

Labels are a necessity. You can buy plastic labels, cut up old venetian blinds, use popsicle sticks, or reuse old labels. If you are reusing labels, wash and sterilize them the same way you did the pots. Think about how much information you want on your labels so you get the right size. In addition to variety name, you may want to include seed source and important dates (when planted or transplanted).

Most seeds need warmth to germinate and standard room temperature is not warm enough. Optimal germination rates occur when soil temperature is around 70° to 80°F and some seeds will require 90°F. For instance, a tomato seed at 50°F will take 43 days to germinate, whereas at 80° to 85°F it will germinate in 6 days. Some seeds do prefer cooler temperatures. Lettuce, for instance, may do better sitting directly on the kitchen counter. Since most of us don't have the luxury of a heated greenhouse, a propagation mat is your best option for those seeds that like warmth. This will be the most expensive investment you will make for this project but it will last a long time and will make the difference between success and failure. A soil thermometer is another good piece of equipment to have.

The table below lists a few seeds that are commonly started indoors, the range at which reasonable germination will occur and the optimum temperature for highest germination rate in the least number of days. This data illustrates how important heat is for certain types of seeds and how others are more forgiving.

Vegetable	Acceptable Temperature Range (°F)	Optimum Temperature (°F)
Lettuce	40 – 80	75
Onions	50 – 90	75
Parsley	50 – 85	75
Cabbage	45 – 95	85
Eggplant	75 – 90	85
Peppers	65 – 95	85
Tomatoes	60 – 85	85
Cucumbers/Squash	65 – 95	95
Okra	70 – 95	95
Hot Peppers (e.g. Habanero)	80 – 95	95
Watermelons	70 – 95	95

Some seeds need light to germinate, and all seedlings need light once they have sprouted. Place regular fluorescent lights (no need to invest in expensive grow lights) about 3 to 4 inches above the flats. Put the light fixture on a chain so you can raise it as the seedlings grow. The seedlings will need 12 to 16 hours of light each day so a timer may also be handy. Sunny windowsills do not necessarily provide enough light for seedlings. They will "lean" and become very leggy. Installing an inexpensive shop light will ensure healthier plants that will withstand transplant outside much better.

The Process

1. Select your seeds. Start with local seed suppliers since they most likely carry what grows best in your area. Ask other gardeners for advice. Visit your local Master Gardener clinic. Check [Seed Sources](#) for ideas on where to get started. Many seeds will store for one or more years if you keep them in a cool, dark location with low humidity. Keep them in their original package or in a sealed plastic bag (remember to label it). Write the year on the package so you will know how old the seeds are.
2. Fill sterilized pots with your seed-starting medium. The medium should be moist before planting the seeds. You can either thoroughly moisten the medium in a separate tub or water it in the pots thoroughly. In either case, allow the medium to drain before planting the seeds. You should end up with moist, but not soggy, medium about 1/2" inch from the top of the pot.

3. Sow the seeds thinly in the pots. Seedlings will need good air circulation so do not sow too many seeds per pot. A general rule of thumb is no more than 3 seeds per each cell of a six-pack. Of course, this will vary depending on the size of the seeds. A pepper seed is very easy to control – basil seeds are a little more difficult. Don't worry too much – you can always thin later. If you are using old seeds, you may want to sow more since the germination rate may be lower. Larger seeds should be covered with a fine layer of dry medium. Some smaller seeds germinate better if exposed to light. Follow the directions on the seed package. You can then moisten the top layer of medium with a mister.
4. Label your pots as soon as you sow the seeds. Don't take a phone call, don't pick the kids up from school, don't check the soup on the stove until you label the pot. Otherwise, you will most surely forget what you just sowed.
5. To help maintain moisture level, cover the pots with plastic wrap or a plastic bag. Use straws or sticks to make sure the plastic does not touch the surface.
6. Place the seeds in your prepared warm spot and provide light as needed.
7. Check your pots daily. If the medium has dried out, moisten it by either placing the entire pot in a basin of water to wick moisture from the bottom or by misting the surface. Leave the plastic off for about an hour to remove excess condensation.
8. Once seeds germinate, remove the plastic covering, provide 12 to 16 hours of light daily, and keep them watered consistently. You can remove them from the bottom heat once germination has occurred, but they will still need daytime temperatures of 60° to 70°F and nighttime temperatures above 55°F.
9. After the seedlings have developed two sets of true leaves, transplant them into individual pots that are large enough to hold them until planting outside. Don't forget to label! At this point, you should also fertilize weekly with a soluble, complete fertilizer at half strength. Continue to check daily for moisture. Turn the pots a little every day or so to prevent them from leaning toward the light.
10. Before transplanting to the garden, don't forget to harden off the seedlings. It would be a shame to go to this much work and then shock them to death.

Common Problems

If your seeds do not germinate, it is most likely because they are not warm enough or the seeds are no longer viable (too old or not stored properly). Check germination temperature recommendations and start with a fresh set of seeds.

If your seedlings wither, you probably let them dry out. These baby plants do not have big roots and need consistent moisture. Some seedlings will perk up again with a little water; some will not.

If your seedlings wilt and turn black at the stem or if the seeds rot just as they should be germinating, you probably have damping-off, which is a fungal disease. This disease cannot be cured so you must take precautions to prevent it. The use of a sterile seed-starting mix, shallow, sterilized pots, good air circulation, fresh room temperature water for moistening, and not over-watering are all good prevention techniques.

The first problem is getting started. Try a few things this year and we bet you will become a regular seed starter.

Resources

Bubel, Nancy. *The New Seed-Starters Handbook*. Pennsylvania: Rodale Press, 1988.

Clark County Master Gardeners (2001, January/February). [Starting Seeds Indoors, Part One](#). Garden Mastery Tips.

Clark County Master Gardeners (2001, March). [Starting Seeds Indoors, Part Two: Damping Off](#). Garden Mastery Tips.

Clark County Master Gardeners (2001, January/February). [Starting Seeds Indoors, Part Three](#). Garden Mastery Tips..

Pokorny, Kim. Start-Up Success, *The Oregonian Homes & Gardens*, January 26, 2006, pgs 18-19.

Vargo, Adrianna. 10 Seed Starting Tips. *Fine Gardening*, January–February 2003, pgs 61-64.