

Starting Plants from Seed

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Starting your own seeds is FUN. An added plus is the enormous variety of the different vegetables you can start on your own and watching the seedlings grow is entertaining. In my opinion, the home-grown tomatoes always taste extraordinary.

SEED SELECTION

The first step in your adventure is deciding what you want to plant and eat. Tomatoes, peppers, what varieties, what colors..... The seed packet has all the information needed to make your choices.

Days to maturity is critical. In town, our last frost date in spring is approximately mid-May (sometimes May 30th). In town, our first frost date in fall is approximately September 15th. That is a 4-month window around 120 days. If the seed is usually planted straight in the garden, like carrot seed, then the time to maturity is the time between planting and harvesting the first carrot. If the seed is usually started indoors and then planted in the garden, like tomatoes, the time of maturity is the time from setting out seedlings to the harvest of the first tomato.

When to start seeds indoors. Usually, 6-8 weeks before the mid May frost. So...start your seeds around mid-March for an 8-week window or April 1st for a 6-week window.

The packet gives the year the seeds were packaged, a description of the plant, how deep to plant the seeds, thinning of the seedling, how tall the plant will grow, determinate or indeterminate.

CHOSING THE RIGHT VARIETIES FOR YOU

*Heirloom or also called Open Pollinated - you can save these seeds and they will grow exactly like the plant you saved them from if the plants were not allowed to cross-pollinate in your garden.

Examples are Rutgers Tomato or Pineapple Tomato

*Hybrid - a mix of 2 or more parent plants. Seeds saved from a hybrid will produce a plant like **one** of the parents. Do not save these seeds.

Examples are the Early Girl Tomato and Celebrity

*Determinate - vegetables ripen in a concentrated time frame. Plants usually stay smaller and more compact.

*Indeterminate - fruiting and harvest occur during the entire growing season. Plants usually need staking, trellising and can get very large.

SEED STARTING SOIL MIX

The seedlings need a lighter soil mix to easily send down roots. Please use, or make, a product that says, "seed starting mix". It is helpful to moisten the mix a day before and warm water will efficiently moisten the mix.

Depending on your goals, you may choose a soil mix labeled as organic, or OMRI certified (Organic Material Review Institute) or one without those labels.

The soil mixtures usually contain sphagnum peat moss, vermiculite, perlite, yucca.

Dirt from outside and from your garden can harbor diseases and potting soil is too heavy for tender, immature seedlings and roots.

Soil Blocking, when starting seeds, requires a different soil structure and is mentioned at the end of this handout.

HEAT REQUIREMENTS

Most seeds require warm soil, not warm air, to germinate. The soil temperature range for the best germination of the seeds (pepper & tomato) is between 75 to 85 degrees. This can be achieved using a germination mat. The mat is an investment that will ensure your success and can be used year after year.

*An instant read cooking thermometer comes in handy for checking the soil temperatures. Refer to your Seed Starting Timetable handout for soil temperature requirements.

LIGHTING REQUIREMENTS

The seedlings need the proper degree of bright light to create strong, stout stems. You are attempting to imitate a bright sunny day, indoors, in the middle of March. Windowsills in North Idaho in March do not provide adequate, long-term light.

There are two critical measurements of lighting to be aware of;

*Lumens are a measurement of the brightness of the lights being used (like comparing a candle to a searchlight).

*Kelvin is a measurement of the color of the lights being used (like comparing a cloudy day to a bright, sunny day).

In my experience, the best “recipe” of lumens and kelvin is:

5000 to 6500 kelvin and 2900 to 3500 lumens.

This is readily available in a 4’ fluorescent light tube and a LED 4’ shop light.

The seedlings require approximately 14 to 18 hours of light daily. An automatic timer is very helpful.

TRAYS, CONTAINERS, DOMES

A waterproof tray is needed to place the seed starting containers in. Deli trays are a good resource, as are the rotisserie chicken packs because they have lids.

The possibilities are endless for seed starting containers. You can purchase small plastic pony packs, re-purpose yogurt containers, use small paper cups, Jiffy peat seed starters, etc....

*Any container must bottom holes for drainage.

Domes are needed to create humidity. Plastic wrap over the tray is acceptable. You can also purchase clear domes.

One of the best options is to buy the seed starting kits. They include the waterproof tray, the tray to fill with seed starting mix and a dome. Some also include the heat mat.

*An important note - it is best to start the different vegetables in their own trays. Tomatoes germinate days earlier than peppers, so the light, heat and humidity requirements are different. If they are all in the same tray, problems arise.

MAKING THE MOVE TO A LARGER POT (TRANSPLANTING)

Generally, when your seedlings have two sets of true leaves, it will be necessary to move them into a larger pot. True leaves resemble leaves of the plant you are growing, not the initial “seed leaves” which emerge first. They will quickly outgrow their starting containers. A 3” to 4” pot works best. If you have ever repotted a house plant, the same reasoning applies here. Now is the time to use a good potting soil and remember to moisten the soil with warm water before use.

At this time, you can supplement with a water-soluble fertilizer. Keep in mind these are baby plants and most importantly, *more is not better* regarding fertilizer. I use ¼ strength and use lukewarm water, not cold.

HARDENING OFF

By now your little seedlings are plants! When they have developed 5 true leaves, it is time to ease them into the outdoors. This process is necessary and takes a bit of time.

Move your seedlings outside into a shady sheltered spot for a few hours the first day, and then each day thereafter leave them out for a longer period. You start out by putting them in the shade, then filtered shade and finally into the sunlight over a period of about 2 weeks.

PLANTING ADVICE

It is beneficial to wait for 2 or 3 cloudy days when planting the garden. It is hard on the plants when they are planted on a hot sunny day. Give the young plant some protection if the weather turns cold. A cloche, bell jar or plastic jug works well for this. Cut off the bottom of the jug and place over the young plant on cold nights. To avoid overheating your sensitive seedlings, remove these covers if the sun comes out.

Refer to additional handouts on our website for more information about cool season and warm season crops.

Soil Blocking:

One method for starting seeds is the soil block. A different mixture of soil (or recipe) is needed when using soil blocks. See the recipe below. Soil block makers create blocks of growing medium that have been lightly compressed, so they maintain their shape without the need for plastic containers. As seedlings grow, their roots reach the edges of the soil block and are “air pruned” because of the separation between the blocks. This separation also helps increase the amount of oxygen available to the roots, which can increase vigor. This creates a substantial advantage when seedlings are transplanted into the field; reduced root disruption means they are less prone to transplant. It also drastically reduces or eliminates the number of plastic pots you use and store. Additional information on soil blocking can be sourced from [Penn State Master Gardener Program](#) or [Michigan State University](#).



Soil Blocking supplies can be purchased from the following suppliers or sources for making your own tools can be found on the internet.

- [Ladbrooke](#)
www.soilblockers.co.uk
- [Territorial Seeds](#)
www.territorialseed.com
- [Johnny's Seeds](#)
www.johnnyseeds.com

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Here are two ratios with measurements, for the soil mixture only to be used with soil blocks:

Step 1. Buy Blood meal (or cottonseed meal if you have to), Rock Phosphate and Greensand in equal sized bags. Empty them into a 5 gallon bucket and mix it up. Your ratio is equal parts of each or a 1:1:1 ratio. Then mix it up and measure out as noted below. I store this bucket and use it on many things per my soil test, and it lasts a few years for me. The bucket I use is marked 1:1:1 for the ratios. Using these containers, this mix gives me a nutrient level of 15-3-.1 which is the N-P-K. I mix up the amounts (larger or smaller) depending on what I need. I let it settle once mixed for a week or two before using it to make the soil blocks. I wear a dust mask, so I don't breathe in the fine particles when I am mixing.

Step 2 for a Larger Amount:

I use a coffee grounds container that holds about 12 cups of liquid (we will call that a part).

- 3 parts Peat Moss into a rubber container with a lid
- Then add a little under, or just at 1/2 Cup fertilizer from the bucket you mixed above (with the 1:1:1 ratio) and ensure it first blends with the dry peat moss.
- Mix well
- Then add 1 part perlite to the mix
- Then add 3 parts compost to the mix
- Mix

Step 2 for a Smaller amount:

I use a container that holds about 7 cups. It is a 48oz (3 lb) cottage cheese container (we will call that a part, its just smaller than the one above).

- 3 parts Peat Moss into a rubbermaid container
- Then add just under 1/4 Cup fertilizer from the bucket you mixed above (with the 1:1:1 ratio) and ensure it first blends with the dry peat moss.
- Then add 1 part perlite to the mix
- Then add 3 parts compost to the mix
- Mix

Kara Carleton adapted this from an old recipe from Eliot Coleman and uses it on starts each year.

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