

Starting Seeds Indoors

Kentucky GROW



The goals of this module are:

To learn how to start your own flower or vegetable plants from seed indoors.

What you need:

- Seeds. Flowers that are easy to start from seed include marigolds, cosmos, calendula, snapdragons, zinnia, columbine, coreopsis, coneflower, nigella, daisy, and strawflower. Easy-to-start herbs include basil, chives, cilantro, and dill. Tomatoes and peppers are the best vegetables to start from seed.
- Newspaper or plastic sheeting to protect work surface
- Planting containers and bottom trays
- Seed-starting soil
- Plastic bags to cover containers
- Labels and labeling pen
- Bucket in which to moisten the soil
- Water
- Trowel or old spoon to fill containers with soil
- Pencil or other device to poke holes in the soil; tweezers for smaller seeds
- Heat source
- Light source

Time needed:

Plan on one hour to complete this activity. This is the amount of time needed for the preparation work of moistening the soil, filling the containers, planting, making labels, and cleaning up.

How to prepare:

All containers should be clean and have drainage holes. If time is short, it may be advantageous to have the pots filled with moistened soil. Some seeds need to be pretreated by being soaked in water overnight (it will be noted on the seed packet). It may also be beneficial to choose to begin with the larger seeds such as four-o'clocks, marigolds, and tomatoes, because they are easier to see and handle. Aprons can be an asset to keep clothes clean, and running water and soap should be available for participants to wash their hands if necessary.

The program:

Starting vegetable and flower plants from seed indoors can be rewarding and fun, especially if done in the late winter, when few things are growing outside. Also, the selection of plant varieties is better in the seed catalogs as compared with what plants are available in garden stores. Another advantage to starting

your own seeds is that if the seeds are planted indoors at the proper time, you can have plants ready to go in the garden when you need them. Raising your own plants can also save money.

Planting Containers

There is quite a variety of pre-formed pots on the market that are convenient to use and give your plants a good start. The plastic “six packs” used by growers allow them to maximize greenhouse space and fill thousands of pots easily, but the home gardener has better choices for starting seedlings. Plastic pots come in sizes from 1 to 4 inches for sowing seeds, and you can sow seeds in individual pots, open flats, and flats divided into cells. Fiber pots made from peat moss or recycled paper also come in various sizes and can be planted pot and all into the garden, which reduces transplant shock. Another product is the Jiffy® peat pellet, which is a compressed disk of sphagnum peat covered in flexible plastic netting. Adding water causes the peat moss to expand into a small plug, which can be planted directly like the fiber pots. There is also a device that allows you to make small pots out of newspaper, and another device that squeezes soil into soil blocks. Kits are a good idea for the beginner or for someone who will not be starting many seeds. They contain everything you need: pots, bottom tray, cover, soil, and even capillary watering mats and seeds.



Seeds can be started in store-bought containers or in yogurt containers, frozen-orange-juice cans, Styrofoam or paper coffee cups, foam meat trays, egg cartons, pie pans, or basically anything that can hold soil. Clean previously used pots with warm, soapy water, then dip in a solution of one part bleach to nine parts water. Rinse well with tap water before starting seeds. Punch several holes in the bottom for good drainage.



Soil

Seeds can be started in ordinary garden soil, but the soil must be sterilized first to kill any fungi or other organisms harmful to the seedlings. This can be done by baking the soil on a cookie sheet in the oven at 250°F for a few hours, but most gardeners prefer a specially prepared soil-less mix that is already sterile. The structure of garden soil will quickly disintegrate in a container situation. It is best to use a mixture of equal parts of sterilized garden soil and a soil-less potting mixture instead of straight garden soil. Or you can make your own seed-starting medium by mixing equal parts of milled sphagnum peat moss, perlite, vermiculite, and sand.

Seeds

Seeds can be bought locally from garden centers, hardware stores, and feed stores. The selection will be basic, and there may be a choice of only two or three different tomatoes or peppers. Most have been selected to do well in your area, though. The connoisseur may choose instead to order seeds from innumerable seed catalogs available to the gardening public. A list of a few popular seed companies is included at the end of this module.

Seed must be fresh, not more than a year old, for the best results. Beginning gardeners are better off not using seeds saved from the previous year, as they may not germinate well or grow true from seed.

Some seeds need to be pretreated for the most successful germination. Morning glories, sweet peas, and others do best if soaked in water overnight. Others require cold stratification, which

means they must be covered in moist soil and refrigerated for months (to simulate winter) before they will germinate. Most popular flowers and vegetables do not require any pretreatment.

Light

A few seeds need light to germinate, but all plants need light once they emerge from the seed and produce leaves. Windowsills are not the best, as the light is typically too weak and comes from only one direction. Also, drafty windowsills encourage fungal diseases. A better choice is to place the plants under cool white fluorescent lamps, a mixture of cool white and warm white fluorescent lamps, or a mixture of cool white and plant-growth fluorescent lamps. Place the lights 5 to 8 inches from the tops of the plants, and leave the lights on for 12 to 18 hours a day (a timer comes in handy here). Metal and plastic light tables can be purchased from garden suppliers, or a simple table can be built from 2x4 lumber, shop lamps, and plywood.

Heat

Seeds germinate over a wide range of temperatures, but the home gardener can get good germination of most seeds at 65 to 75°F. Seeds germinate best with bottom heat - heat mats or soil cables can be used, but they are expensive to buy. Placing the planted containers on top of the refrigerator, radiator, or even in an unheated gas oven (the pilot light alone may provide enough heat) is usually sufficient.

Sowing Seed

1. Gather all the materials together and cover the work table with newspaper or plastic. Read each seed packet to determine the best time to start your seeds. For example, if you want to plant your tomato seedlings outside about May 5, count back six weeks (the time needed to grow tomatoes to transplantable size), add a week (the time needed to germinate the seeds), and add another week (the time needed to harden off the seedlings outdoors). Starting too early can produce spindly, weak plants that will have no advantage over plants started later.
2. Moisten the planting soil so that when squeezed together in a ball, it holds its shape but doesn't drip water. Fill the container to within $\frac{3}{4}$ inch of the top, smoothing the surface with your fingers. For tiny seeds, add $\frac{1}{4}$ inch of a very fine mix or vermiculite.
3. Consult the seed packet to determine the planting depth, which is usually about twice the diameter of the seed. Use the eraser end of a pencil to poke a hole in the soil for larger seeds. Broadcast tiny seeds on top of the soil, then cover with a fine layer of sphagnum peat moss or vermiculite. Plant several seeds per pot in case not all the seeds germinate. Seeds that need light to germinate can be lightly pressed into the soil and then finely misted with water. Label the pot.
4. Cover the planting with a plastic bag or other covering. Cut a few small holes in the plastic for ventilation. Place in a warm spot and check daily for germination. Do not add more water to the soil until germination occurs. Move the plants to light and begin watering with a very dilute solution of liquid fertilizer.

Caring for seedlings

1. Move the plants to a cooler location (60 to 65 F) with good light.
2. Check the plants daily and thin to one plant per pot when the seedlings have two or three leaves. An easy way to thin is to simply snip off the plants at soil level with a pair of scissors. If the plant outgrows its pot, transplant to the next larger size. Pinch off any early flower buds.
3. When the time has come to move the plants outdoors, acclimate them to the outdoor environment slowly. Place the plants outside in the shade for half a day, being careful not to let them dry out. The next day, increase the time outdoors, eventually moving the plants into the sun by the end of seven days. Plant outdoors when the plant can be in the sun for a whole day without showing signs of stress.

Accommodations for this program:

As with all Kentucky GROW programs, providing needed accommodations is an individualized process. Below are some ideas to get you started, but the best route to take is to listen to the person, as he or she will usually have the best ideas of all!



For those with mobility impairments, ensure adequate leg and knee clearance under all worktables. Ensure that all materials are placed at an accessible height and reach. Consider providing smaller portions of soil mix rather than large, heavy bags. If individuals have difficulty handling seeds, several options exist. Pre-planted seed starters are available, but the choice of plant varieties will be limited. Consider a hand seeder, which dispenses seeds one at a time. Other options are to use seed tapes to plant rows quickly and easily or to mix tiny seeds with sand and shake them out of a salt shaker. Another idea is to make seed tapes from strips of newspaper or paper towels. The seeds are mixed in a paste made from flour and water and placed at the appropriate spacing on the strips and then the tape is placed on the growing media.



For those who have cognitive impairments, consider working as a team for this module. Use photos or pictures to demonstrate each step. Provide options as to different types of seeds to start. Show examples of what the seeds will look like after germination and when they become mature plants. Allow for different levels of participation. Some may find there are particular parts of the planting process they enjoy, such as labeling seed trays, watering, or passing out the seeds.



For those with learning disabilities, provide the information in a variety of methods. Some individuals learn best by hearing the instructions, others will prefer to see the step by step procedure in writing with pictures or photos, or have the instructions on tape. Written instructions will also be helpful for those with hearing impairments.



For individuals with visual impairments, review placement of the needed materials. Don't move items without informing the person. Ensure that the area is well lit. Another idea is to sift light colored sand over the darker soil as you seed to be able to see contrasting color areas that are seeded. This can be helpful for those with cognitive impairments as well. A magnifying glass can make small seeds easier to see. Provide any written instructions in large print.

Where to go from here:

Easy Plant Propagation: Filling Your Garden With Plants from Seeds, Cuttings, Divisions, and Layers, by Nancy Ondra and Barbara Ellis, Houghton Mifflin Co., 1998.

Seeds and Propagation, by Susan McClure and Jim Anderson, Workman Publishing, 1997.

Seed Sowing and Saving, by Carole Turner, Storey Communications, 1997.

“Weekend Gardener.” Website with an extensive amount of information on how to start flower, vegetable, and herb seeds. Online at <http://www.chestnut-sw.com>

“Sow Good: Supplies for Starting Seeds,” by Peter Loewer, Brooklyn Botanic Garden. Online at <http://www.bbg.org/gar2/topics/sustainable/handbooks/essentialtools/5.html>.

“Home Vegetable Gardening in Kentucky,” University of Kentucky Cooperative Extension Service Publication ID-128, pages 9 – 11.

“Vegetable Cultivars for Kentucky Gardens” University of Kentucky Cooperative Extension Service Publication ID-133.

A Few Catalog Seed Sources:

Territorial Seed Company, www.territorialseed.com, 888-657-3131.

Pinetree Garden Seeds, www.superseeds.com, 207-926-3400.

The Cook's Garden, www.cooksgarden.com, 800-457-9703.

Burpee's, www.garden.com/main.asp, 800-888-1447.

This material is available in alternate formats. Contact Kentucky GROW for more information.