

# Horticulture Diagnostic Laboratory



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## Starting Seeds Indoors

There are many advantages to starting your own seeds indoors. Although some disadvantages may also exist these tend to be the result of improper growing conditions and planting procedures. By starting your own seeds you are able to choose plant varieties based on those characteristics which are most important to you. By carefully choosing the time you will start your seeds indoors you will be able to have transplant-size plants at the ideal planting time in the spring.

**Seed Starting Basics:** Most all seeds have certain basic requirements: 1) planting medium which is well drained and sterile (free from any disease, insect or weed pests); 2) sufficient amounts of water and air as well as the proper soil and air temperatures (some plants will germinate faster with cooler temperatures); 3) sufficient levels of light intensity and duration immediately after germination/sprouting.

Although all of these are important, insufficient amounts of light will 9 out of 10 times be the single factor that causes seedlings grown indoors to be unsuccessful. For this reason make sure you have determined how you will provide sufficient light for your seedlings before you plan on starting your own seeds indoors.

**When to Sow Seeds:** Although fairly simple to figure out many find it difficult to determine when to start particular vegetable and flower seeds indoors. Instructions are usually provided on the package label. Most direct you to start seeds indoors a set number of weeks before the average last spring frost/freeze.

On Long Island there are 3 basic dates for the average last spring frost/freeze depending on where you live. For most of Suffolk County and eastern Nassau County the average last spring freeze is April 20<sup>th</sup>. For the normally colder parts of central Suffolk County, after April 20<sup>th</sup> is used as the date for the average last spring freeze. For western Nassau County to New York City, use before April 10<sup>th</sup> as the date for the average last spring freeze. Starting your seeds the required number of weeks before the average last spring frost/freeze date will give you transplant-size vegetable and flower plants and a week or two to spare for hardening off the seedlings before they are planted in the ground.

Instructions for certain tender vegetables and annual flowers may direct you to delay planting outdoors until all danger of frost has passed. When this situation occurs you will need to wait until at least mid- to late-May in most areas of Suffolk County. In warmer sections and most of Nassau County early- to mid-May is more accurate. It is very helpful to have a coldframe outdoors where such plants can be kept during the day and moved back indoors at night.

**Containers:** There are many types of seed starting containers to choose from depending on your needs and preferences. Containers can be simple and inexpensive or costly and elaborate. You will need to judge the advantages and disadvantages of the many containers available and see which ones meet your needs at the lowest price. It is usually best to use new, clean containers each season. If you choose to reuse containers you must thoroughly clean the containers to remove all traces of old soil and plant debris. Even when this is done you may still risk having your plants succumb to a disease. For this reason it is often best to start with new containers.

Many gardeners start seeds in various plastic and cardboard containers which they would have otherwise discarded with their weekly recyclable products. These can include cardboard milk cartons, egg cartons, metal cans, disposable drinking cups, Styrofoam packing material, etc. In most cases these containers should be free of any serious pest problems. Therefore cleaning with hot soapy water should be sufficient. Also be sure that an

adequate number of drainage holes is made on the bottom of each container. Using containers of this type can be very adequate for the gardener who is not starting a large number of seeds.

If you plan on starting a large number of seeds you are better off using the various types of plastic trays or “flats”. These will allow you to start larger numbers of plants in a relatively small area. One type is the simple four-sided, open tray which is a few inches deep. This can be used alone or some prefer to fill the tray with various sized “cell-packs”. The cell pack allows you to grow an individual plant in each cell. The cells will vary in size.

Another possibility is a propagation tray which allows you to grow various sized “plugs”. Trays are available which allow you to grow 273, 98, 72, 50, 38, and 24 plugs per tray. The number of plugs grown in each tray could vary with the different manufacturers, but these numbers will give you an idea of what is on the market.

Seed starting tray “systems” have become popular items in garden catalogs. These systems consist of a series of trays, a clear cover and usually some type of capillary mat. The idea is that you are able to grow seedlings inside of the enclosed system. Watering is usually accomplished by adding water to a reservoir tray on the bottom which keeps the capillary mat wet. This in turn keeps the growing medium moist. Many have a special peg board that allows you to push your finished “plant plug” out of the planting tray; 24 or 40 planting cells per tray are common.

Another popular seed starting container is made from peat or fiber. These come in various sizes which can be placed inside plastic trays for convenience. If you would like to start more seeds per flat you may want to consider using one of the pellets which are made from peat. These pellets are round and flat and a single seed is placed in each. Upon watering, the pellets will expand into a small cube-shaped structure where the germinated seed will grow.

**Planting Medium:** A good planting medium for seed starting should be porous and well drained and should also be free of any insect, disease or weed pests. For this reason it is usually advisable to purchase or make a seed starting medium. Avoid the use of outdoor soil. Many seed starting mixes are available at garden supply stores. If you will be starting seeds which are small and fine there is an advantage to using one of the finely screened mixes. In this way you will avoid much of the “debris” which can be found in coarser mixes used for potting plants.

Most of the commercially available mediums are mixtures of sphagnum peat, vermiculite and/or perlite. They are often referred to as soil-less or peat-lite mixes. It will vary but some mixes will also contain various levels of fast- and/or slow-release fertilizers. These mixes are in most cases considered sterile and will need no disinfecting.

Fill your planting container with the growing medium and you are ready to start your seeds.

**Sowing Seeds:** It is helpful to moisten the growing medium first. For small amounts of containers or flats I find that the sprayer attachment on the kitchen sink faucet works well. Use warm water and in a matter of minutes the mix will be adequately moist. For larger amounts of flats you may want to soak the mix overnight in a sterile plastic bucket or invest in a mister nozzle which can be attached to the end of a clean garden hose. If water is applied too fast to a dry soil-less medium, you may find it will not accept all of the water immediately. In this case it will flow over the container or tray and create quite a mess. Many of the prepared mixes have a wetting agent added to them which helps alleviate this problem.

When sowing seeds in flats do so sparingly so that there will be plenty of room between the individual plants for growth. If you are using containers, do not sow more than 4 seeds per container depending on its size. Follow the instructions on the package label for depth of planting. The larger seeds are usually not a problem, but some of the very tiny seeds such as snapdragons may only need to be scattered on the surface of the medium. With small seeds you can sometimes sow them on top of the medium and then “water them in” with one of the fine mist attachments that goes on the end of a garden hose.

After seeding you should cover the trays or containers. For many, a piece of plastic wrap secured to the container works fine. I have found that the small panes of glass from old windows work well. By covering the tray you keep moisture and heat inside which are essential to good germination. Place the flats or containers out of direct sunlight. Providing bottom heat will usually hasten germination of most seeds. Keeping the temperature of the medium at 70-75 degrees F will usually improve germination of most seeds. Try placing the flats or containers on the top of a radiator. You can also purchase heating mats or cables which will provide even bottom heat. Check the seeds daily to be sure the medium does not dry out.

**Care of the Seedlings:** As soon as the first few seedlings germinate move them immediately to a location with full sun. If you are late in providing adequate light for the emerging seedlings you will be left with long, thin and leggy plants which are not able to stand straight and support themselves. A southern window which receives direct sunlight all day is ideal. Artificial lighting can also be used if you do not have windows which will provide adequate sunlight. You should consider regular fluorescent lighting or wide-spectrum plant lights or grow lights. These are modified fluorescent lights which provide the proper proportions of the color spectrum needed for growing plants. You will need to suspend the fluorescent or grow lights so they are 3 to 6 inches above the tops of the seedling plants. These will be moved (sometimes daily) as the plant grows taller.

As the seedlings grow over the next few weeks it will be important to continue to provide them with adequate light. As they grow try to keep the seedlings on the dry side. The planting medium should not be allowed to dry out so that the plants wilt, but at the same time should not be kept constantly wet. Keeping the temperature cool (60° to 70°F) will allow the seedlings to grow at a moderate rate and at the same time keep a sturdy and stocky growth habit. Thin the seedlings out removing all but the strongest plant from each cell pack, or remove individual plants in flats so there is adequate space between each plant.

Seedlings usually don't need much fertilizer initially. After three to four weeks of growing you can use a liquid fertilizer according to label instructions. Do not over-fertilize.

**Hardening Plants:** Hardening plants refers to a one- or two-week period of exposure or acclimation to outdoor weather conditions. You can place the plants outdoors on warm days in a protected area. It is very important to protect plants from direct sunlight and winds.

Coldframes work well for this purpose. Be sure to bring plants indoors at night, especially if cold overnight temperatures are expected.

If you find that your successes were not as good as you expected, try to look back and identify the causes of the problems. Quite often a slight adjustment in growing conditions is all that is needed to be successful at starting your seeds.

Resource: "Starting Seeds Indoors" by Thomas Kowalsick, *Long Island Gardening Magazine*, Jan-Feb, 1993.

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