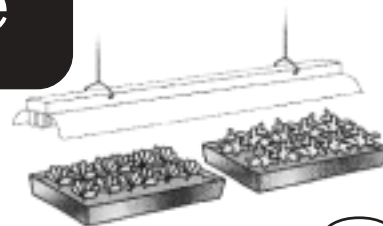


# Starting Seeds at Home

Starting seeds indoors makes a lot of sense in the North Country. With our short growing season, setting out sturdy seedlings at the time you would normally sow seeds gives you a head start on the growing season of several weeks.



2/02

Many home gardeners become discouraged starting their seeds indoors when the plants become weak, spindly, leggy or even die of diseases. Success in the garden starts by planting only high quality, stocky, vigorous plants. It's not that difficult to grow good quality seedlings at home. The following information should help provide just the edge that is needed to meet Mother Nature head on. When the growing season is ready for your plants, your plants will be ready for the season! Ask yourself the following questions about your situation:

## ***Is it Time Yet?***

- Providing plants with a head start is very important, but planting too early indoors may result in plants that are tall and spindly. It is generally better to err on the side of starting your seeds too late rather than too early. A small plant can eventually catch up, but an overgrown, leggy plant that has been held in a small pot too long may never fully recover its vigor.
- First decide when you want to put your plants outside, usually based on the last chance of frost for your area. Then using a chart like the one included at the end of this fact sheet, count back the number of weeks before you should sow. Keep records of when you started each type of seed and how that timing worked in order to fine tune your own planting schedule.
- Plants like beans, beets, carrots and corn should be seeded directly in the garden, but many other plants respond well to a head start.

## ***How Are Your Seeds?***

- One of the advantages of starting your own plants is that you can choose from a wide variety of vegetables, flowers and herbs. From the old fashioned "heirloom" plants to the latest hybrid, seed starting will open up a world of plants to explore.
- Select the plant varieties that will do well in your soil and growing situation. Again it is best to keep a record of those varieties that do well for you and those that do not. Then make decisions based on your own particular growing conditions.

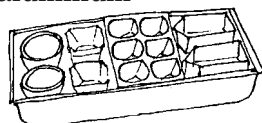
## **Start those high quality, stocky and vigorous plants in your own home**

- **Timing**... one of the most important considerations when starting your seeds.
- **Seeds**... select quality seeds from a reputable source. Do a germination test on seeds saved.
- **Containers**... select containers that provide good drainage. Sterilize previously used containers by washing in a 10% bleach solution.
- **Growing Medium**... select a good commercial medium that is sterile and free of weed seeds.
- **Light**... natural light must be supplemented with fluorescent lighting to provide quality lighting.
- **Sowing Seeds**... timing as well as following proper procedure for each species is important.
- **Moisture and Humidity**... germinating medium must be kept evenly moist but not wet.
- **Temperature**... keep warm to germinate then allow cooler growing temperatures..
- **Fertilizing**... none is needed early on and then seldom is the key.
- **Transplanting**... should be done early and carefully to avoid damaging the plants' delicate roots and stems.
- **Hardening Off**... preparing young plants for full sun, wind and varying moisture is critical.
- **Planting Outdoors**... a cloudy day with little wind is close to ideal. Provide as much care with this phase as with any of the rest.

- For best results buy fresh seeds from reliable sources. Look for varieties well-adapted to your area and having insect and disease resistance.
- If your plants are *not* hybrids or members of the squash family, you can save seeds from your own plants. "Heritage" seeds are open pollinated and can be harvested and stored for next year's crop. It is important to check the germination of saved seeds by sprouting a few in a damp paper towel before planting to make sure they are still viable.
- Plants in the squash family do not "breed true" generally providing an unsuitable harvest.

### ***What Will You Use For Containers?***

- Try all kinds of containers and see what works best. Any container at least 3 inches deep for roots to grow will work as long as you can punch holes in the bottom to provide drainage. Examples include empty plastic vegetable containers, such as the kind mushrooms are sold in, cut off milk cartons, deep sided disposable aluminum pans, yogurt cups, margarine tubs or styrofoam cups.
- Commercial products include fiber or peat pots and peat pellets. Save and reuse cell packs from seedlings bought at greenhouses. They will last for several years.
- Wash all containers well, especially those that have been used previously. Use a solution of 1 part bleach to 10 parts water and rinse well. This will help to prevent seedlings from "damping off."



### ***What Will You Use for a Growing Medium?***

- To ensure success it is worth the extra cost to buy a good quality growing mix. These mixes contain peat moss, vermiculite, and sometimes perlite but no soil. They are often called "soil-less" mixes.
- These soil-less mixes should be sterile and free from insects, disease and weeds. Some mixes have enough fertilizer incorporated for the first 3-4 weeks of plant growth and provide good drainage and water holding capacity.
- Outdoor soils generally lack fertilizer, aeration and drainage and may harbor insects or disease organisms.

### ***How is Your Light Source?***

- Starting plants requires direct light. Even a window facing directly south will not provide enough light to grow the best plants. Many gardeners use plant-growing lamps to supplement the light coming through the window or where there is no natural light.

- Two double-tube fixtures (a total of four tubes) placed side by side are preferable to one fixture with two fluorescent tubes. They will provide quality light of proper wave lengths for a 16 to 18 inch wide growing area. The standard 40 watt, 48 inch long fixture is most popular.
- While expensive "plant-growth" bulbs are available, the use of two "cool white" (F40CW) and two "warm white" (F40WW) bulbs alternated will work as well and cost much less.
- Seedlings and plants should be lighted for 12 to 16 hours per day. A timer that automatically turns the lights on and off is helpful.
- The fluorescent tubes should be placed 4 to 6 inches above the foliage. Make sure the light fixtures or the plant shelf is adjustable to maintain this distance as the plants grow in size.
- Attaching aluminum foil along the edge of the light fixtures will reflect more of the radiation onto your plants.
- Plans for a low-cost shoplight plant stand are available from your local Cornell Cooperative Extension office. Call for a free leaflet.

### ***Are Your Supports and Tables Sturdy?***

- The total weight of the lights, plants, growing media, and other materials can be substantial. An operation that collapses from the weight will damage many of your plants and is disheartening to the gardener.

### ***Did You Read the Seed Packet Carefully?***

- Directions on the seed packets are important to read. They often contain information for special needs prior to or during planting. Some seeds need to be frozen. Some require light to germinate while others prefer total darkness. Directions also tell how deeply the seeds should be planted.
- Most seed packets also provide the number of days to maturity. Growers expect you to know whether you can sow directly into the soil or if you should start seedlings. "62 days" for lettuce means the time from germination in the soil. "62 days" for tomatoes however, means 62 days from transplanting seedlings that were started weeks earlier.



### ***Are You Sowing the Seeds Carefully?***

- Fill your clean containers almost to the brim with moistened medium. Smooth it out and tamp it down. Use a separate container for each type of seed because of the differences in germinating time and rate of growth between different types of plants.

- Sow the seeds thinly over the surface and cover them, if required, with loose growing medium. With tiny flower seeds like petunia and begonia, simply press seeds into the surface and cover with a sheet of clear plastic wrap until seeds have germinated.
- It is always best to plant a few more seeds than what are needed. They may not all germinate, and it is best to have many seedlings so only the healthiest ones are used; but don't overdo it. Young seedlings need room to grow.

### ***Did You Label Your Seeds?***

- Don't skip this step. If labeling each container is neglected, there is a good chance that what was planted will be lost.
- Label each container with the variety name and the date the seeds were sown.
- Clear or white plastic jugs can be cut into strips and written on with a permanent marker. Popsicle sticks or narrow wood strips can also be used.

### ***Should You Cover Your Containers with Plastic?***

- In general, it is not necessary to cover your containers with plastic to form a "mini-greenhouse", although this is a widely recommended practice. Often the heat will build up too much under the plastic and the excess moisture held in by the plastic makes the plants much more susceptible to fungal diseases.
- Instead, watch the surface of the mix and sprinkle lightly with water when it begins to dry out.

### ***Are You Providing the Right Amount of Water?***

- Water is the ingredient that will require the most attention. The medium should be kept evenly moist but not wet or soggy. Too much water will cause the seeds to rot.
- Small delicate seedlings respond well to bottom watering until they are firmly anchored in the soil. Set containers into an inch or so of water and let them soak up as much water as they can. Don't leave the containers in the water for more than an hour.
- If bottom watering is not practical, use a fine spray to water newly planted seeds.
- The water should be at room temperature. It is advisable to allow any chlorinated water to stand for a day to allow the chlorine to dissipate.

### ***What Temperature Will You Maintain?***

- Probably no factor will speed up germination time more than a constant warm temperature. Gener-

ally seeds germinate better if their soil (not air, *soil*) temperature is constantly 70°F or above, some do best at 80°-85°F.

- Do not put seed starting containers on a windowsill; it is much too cool for good germination, particularly at night and in the morning. Maintaining consistently warm temperatures, both day and night, signals the seeds to begin growing.
- Cool season plants like lettuce, the broccoli family, onions, leeks, petunias and pansies thrive in cooler temperatures and become soft and straggly under warm conditions. These plants will thrive in a cool cellar or unused bedroom.
- Warm season plants such as tomatoes, peppers, eggplant, melons, squash and marigolds will barely grow at all in cool conditions.
- If your setup is in a cool place consider providing bottom heat such as a thermostatically controlled heat mat designed for plants. You can also supplement heat by constructing a tent of clear plastic around the lights, which trap the small amount of heat the lights generate.
- Once sprouted, the seedlings grow well at air temperatures between 65°-70°F. They don't require the same incubator environment that seed germination did.

### ***When Will You Fertilize Your Plants?***

- Wait to fertilize your seedlings until the first set of true leaves appear, then use a water soluble fertilizer (such as 10-15-10, 20-20-20, 18-12-6) at half strength every 2-3 weeks.

### ***Are You Planning to Transplant Seedlings?***

- When 1 or 2 sets of leaves develop, (generally 4-6 weeks) it is time to transplant the seedlings. Plants grown in their own containers suffer less root shock when they are transplanted outside. Most any container can be used but be sure to punch holes in the bottom to supply drainage.
- To transplant, remove a section of young plants and rest them on a damp cloth. With a pencil or fork, carefully work one plant free and pick it up by its leaves, not by its stem. Set individual plants into a hole deep enough so that most of the stem is below the surface. Push the soil around each seedling and softly water them well to assure good soil-to-root contact. Let them rest for a day or two to recover from the shock and they should perk up and resume growing.
- Within a week, cut off all but the strongest seedlings in each cell or container.



### How Will You "Harden Off" Your Seedlings?

- Tender seedlings grown indoors must be gradually acclimated to the harsher outdoor sun, drying winds, greater moisture stress and temperature changes.
- When the weather is warm and settled, set seedling containers outdoors in a lightly shaded, sheltered spot for a short time, gradually increas-

ing time outdoors to a full day. Keep well watered and protected from wind.

- Make the transition into full sun and wind beginning with an hour, increasing to half days and then to several full days of sun and wind before the final transplant into the garden.

### How Will You Set Your Plants Outdoors?

- To make this final transition as mild as possible, pick a late afternoon or overcast day. Make sure the plants are well watered. Carefully slide the plants out from the container. Try not to handle the root balls as the root hairs are very fragile. Pick plants up by their stems, trying to keep the soil around the roots as intact as possible. Set each plant in its prepared hole, tamp the soil gently around it, then water it well to get rid of air pockets and assure good soil contact.
- Sometimes as the loose garden soil settles, your seedlings will end up either too deep or too shallow. Check on them after a day and make any adjustments necessary.

### Guide to Starting Annual Flower Seeds Indoors

Flower	Time to Seed Before Last Frost	Germination Time (days)	Growth Rate	Cold/Frost Tolerance
Begonia	12 weeks	10-12	slow	none
Pansy	12 weeks	6-10	medium	good
Lobelia	10 weeks	15-20	slow	none
Stock	10 weeks	10-14	medium	good
Impatiens	10 weeks	15-18	medium	none
Petunia	8 weeks	6-12	slow/med	medium
Ageratum	8 weeks	5-8	medium	none
Scabiosa	8 weeks	8-12	medium	slight
Snapdragon	8 weeks	7-12	medium	medium
Verbena	8 weeks	12-20	medium	none
Dianthus	6 weeks	5-7	medium	none
Vinca	6 weeks	10-15	medium	slight
Salvia	6 weeks	12-15	medium	slight
Statice	6 weeks	15-20	medium	slight
Nicotiana	6 weeks	10-15	medium	slight
Nierembergia	6 weeks	10-15	medium	slight
Phlox, annual	6 weeks	6-10	fast	slight
Sweet Alyssum	6 weeks	4-8	medium	slight
Aster	4 weeks	8-10	medium	slight
Celosia	4 weeks	6-10	fast	none
Marigold	4 weeks	5-7	fast	none
Portulaca	4 weeks	6-10	fast	none
Cosmos	2 weeks	5	fast	none
Zinnia	2 weeks	5-7	fast	none

### For more information on starting plants or related gardening information, please call Cornell Cooperative Extension office!

Clinton County  
6064 State Route 22  
Plattsburgh, NY 12901  
518-561-7450  
<http://www.cce.cornell.edu/clinton/> (or essex)

Essex County  
PO Box 388  
Westport, NY 12993  
518-962-4810

Cornell Cooperative Extension provides equal program and employment opportunities.

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### Guide to Starting Vegetable Seeds Indoors

Vegetable	Time to Seed Before Last Frost	Comments
<b>Cool Season Crops</b>		
Onions, leeks	10 weeks	Keep tops trimmed to 2 inches high
Broccoli, cabbage cauliflower, lettuce	8 weeks	Grow cool. Will tolerate light frost after hardening and may be transplanted to garden early
<b>Warm Season Crops</b>		
Tomato, eggplant, peppers	6 weeks	Keep warm. Do not subject to frost.
Cucumber, cantaloupe Squash, watermelon	3 weeks	Sow directly into peat pots. Keep warm at all times. Very sensitive to frost. Transplant when seedlings are still small.