




Senior Organic
GARDENERS



Germinating Seeds Indoors to Transplant Outdoors

By Rob Danforth



In March, daylight is increasing and the sun lingers longer. In a few weeks, it will be time to start seeds indoors for those plants that need a head start on our Ottawa growing season so they will mature in time outdoors – or perhaps we just can't wait to start some fresh, organic greens!

Our usual start dates are as follows:

- **3rd wk. March** - onions, eggplant, peppers, tomatoes & perennial herbs...
- **Last wk. March** - lettuce if you wish an early crop
- **1st wk. April** - broccoli, cabbage...
- **4th wk. April** - most vines: cucumbers, melons, pumpkins, squash, zucchini...

Indoor Grow Lights

While sunlight is the very best option, often this is not practical for homes and apartments with space and sunlight access issues. To take advantage of the spring sunlight, one would need a solarium, a heated greenhouse, or a south facing window. Grow lights are the next best option. My wife and I have used grow lights with great success for the past 20+ years. When we grew vegetables for the food bank, we had 14 feet of lights covering 7 trays of seedlings at 24 to 36 seed pots per tray.

Grow lights usually come in two lengths, 2 ft. or 4 ft. and there is a choice of full spectrum standard florescent tubes (now difficult to get), T8 florescent tubes (to replace the standard tubes), T5 florescent tubes, and LEDs (combination of blue & red LEDs or warm & cool white LEDs). All work very well, however the most expensive are the LED's. There are smaller desktop, single bulb, grow lamps which also serve well, but they will cover only a very limited number of seedlings. They are best suited to a potted herb or a pot of greens that will get to your table long before we can safely plant outside.

Depending on the size of your in-ground garden or your containers, calculate your needs based on one tray of 24 to 36 seed pots covered by a 2 ft. grow light. There are some elaborate lights and stands available but be sure the lights can be raised and lowered and plants can be uncovered (some T5's are fixed to the domes of one foot covered trays and the light without the dome cover is unsupported).

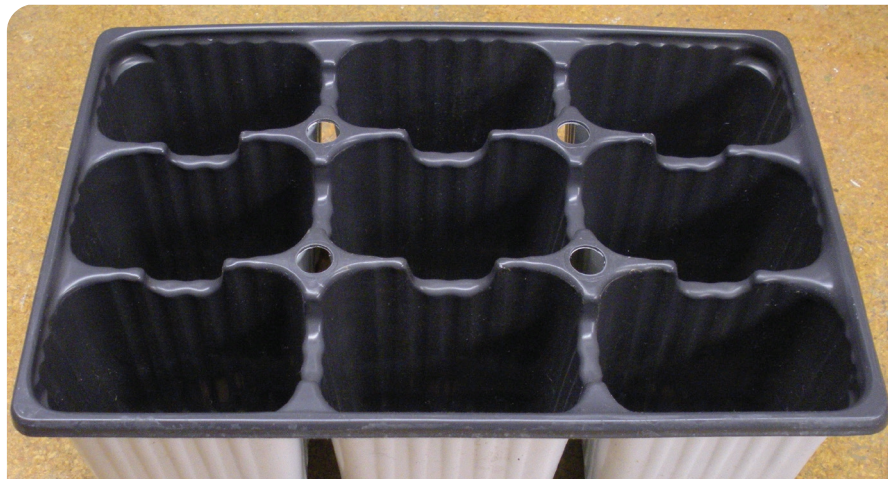
We have both 2 foot full spectrum florescent tubes and 4 foot T8 tubes. The 4 foot tubes (in pairs) hang from the basement joists over top work benches, and they are raised and lowered by means of figure 8 chain (simple hook and eye system with storm door chain). The 2 foot tubes are in stands with 3 fixed heights for the tubes, so we raise and lower the plants instead.



Grow lights are much weaker than sunlight. To compensate, use aluminum foil to contain the light spill and reflect it back onto the plants, and leave the lights on for 16 hours per day. The tubes/bulbs should be within 2 inches of the soil and always 2 inches above the plants – the leaves must not touch the lights! Tip: a timer switch helps with the 16 hours especially if you are late to bed, late to rise, or gone for the weekend.

Seed Pots

Starter pots are available in various materials, all of which work well but some are more ecological than others. We recommend 3 inch plastic pots (re-useable), or cow manure pots (no smell and no pathogens), or do-it-yourself newsprint pots. Peat pots are the most common, however the world supply of peat is dwindling every year and it takes many years to replenish (thousands) – more than my lifetime! Coir, made from coconut husks, comes from away – we don't grow them so the energy used to ship them has to be factored into the ecological cost. Starch pots are an option as well as bamboo but I have only ever found round ones, and their larger sizes are not practical for our seed trays. Seed Trays are 1 foot 9 inches (54cm) x 11 inches (28cm), light plastic (easily punctured!) containers, and will hold thirty-six 2.5 inch seed pots, 18 reusable plastic 3.5 inch pots, or three, 9-plug plastic seed containers.



Seed tray holds 36 peat or cow pots;
18 reusable plastic pots; or three
9-plug seed pots

Growing Mediums

There are seed starting mixes, soil-less potting mixes, and soil mixes available. Seeds germinate very well on their own, regardless of the growing medium. If I am in doubt about the viability of old seed, I start the seed on top of my fridge in the warmth and darkness between two sheets of moist paper towel. A domed container from a grocery store hot cooked chicken makes a great incubator (please see “DIY seed viability test”).

I keep the towel continually moist, and in about 10 days I can see which seeds are viable and which are not. I transplant these into seed pots and put them under the grow lights.

Potting mixes (soil-less) do not have much nourishment for seedlings – 4 weeks is a good rule of thumb – then it is best to fertilize. However, I have had great success with the same soil I use in containers, a combination of 2 thirds organic potting soil mix and 1 third sheep manure (no smell, no pathogens).

Note: I prefer my compost over sheep manure, but my compost is still frozen, and besides, when I bring the outside inside, I bring in more than just the compost (compost + bugs + microbes + fungus + bacteria + seeds in the compost). With the added sheep manure, plants thrive without extra fertilizer. This saves storing various bags of soil and mixes – especially if storage space is an issue. Of course, one can now purchase compost instead of farm animal manure and given the choice, I choose organic compost.

Temperature

The ideal indoor temperature should replicate nature – warm days and cool nights. Lowering the thermostat at night will help. Another temperature consideration is extra warmth for those seedlings that thrive in warmer climates (e.g. peppers). We use an electric heating mat under our tray of both hot and sweet peppers. The heat is very low and barely noticeable to the touch – it would not harm a child. However, protect the electric mat from water and do not let pets chew on it – the results could be hair-raising!



Heating mat for seedlings needing warm soil

Miscellaneous

Consider a timer to activate the lights and the optional heating mat. Then you can be sure the sixteen hours are consistent even if you are sleeping in or you are out late. A fan is also a help. No hurricanes please, but a gentle breeze from time to time across the seedlings will toughen the stems and reduce humidity – replicate nature.

Unfortunately, the usual dry atmosphere in our homes and the drying effect of a fan may deprive the seedlings of the moisture they need. Be sure to check the seedlings often and water them whenever they are approaching dryness – do not let them dry out completely. After watering and after the pots have taken up the water, keep a little water in the trays but just enough to wet the bottoms of the pots – no wading! This will add moisture to the atmosphere. If you have a dehumidifier, you may want to keep it away from the seedlings.

Watering

Water as needed, not as scheduled. Water from the bottom if possible (pour water into the seed tray) but if not, use a mister to wet the seed pots from the top so as not to dig holes and re-arrange all the seed placements with poured water. Depending on evaporation, the pots may stay moist for a day or two. If the pots are too moist for too long, be on the lookout for grey mould or green moss which you may scrape off or stir in after the seedlings have shown themselves. A fan will help with the drying.

If the pots have unfortunately dried out completely, then water from the top to re-start the siphoning process. Water evaporating from the soil surface will draw the water up from the bottom the next time you add water to the tray.

Planting

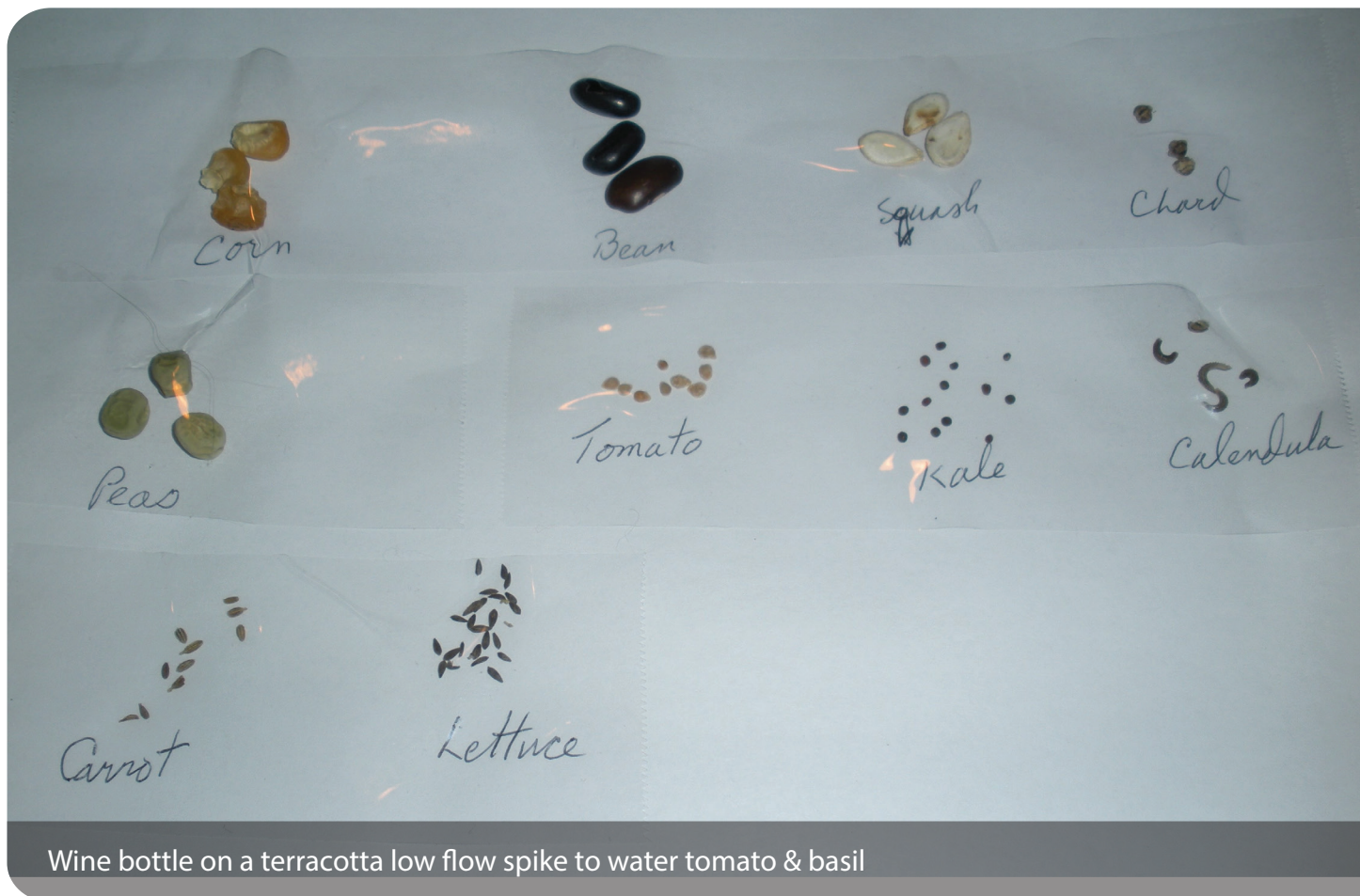
The size of the seed suggests the depth of planting. If unsure, it is best to plant too shallow than too deep.

Plant more than you need as insurance against dead seed. We plant 2 large seeds (e.g. Zucchini) or 3 small seeds (e.g. Tomatoes & Peppers) per 2.5 inch seed pot. Cover the seed trays to preserve moisture until the seed leaves appear – these are first small set of leaves – then remove the covers and store them.

Too long under the tray covers will lead to fungus and to "damping off" whereby the seedlings fall over and die.

As the plants grow, take a pot of 3 seedlings and scissor out at soil level the two weakest plants – pulling them could harm all the plants in the seed pot as roots tend to tangle.

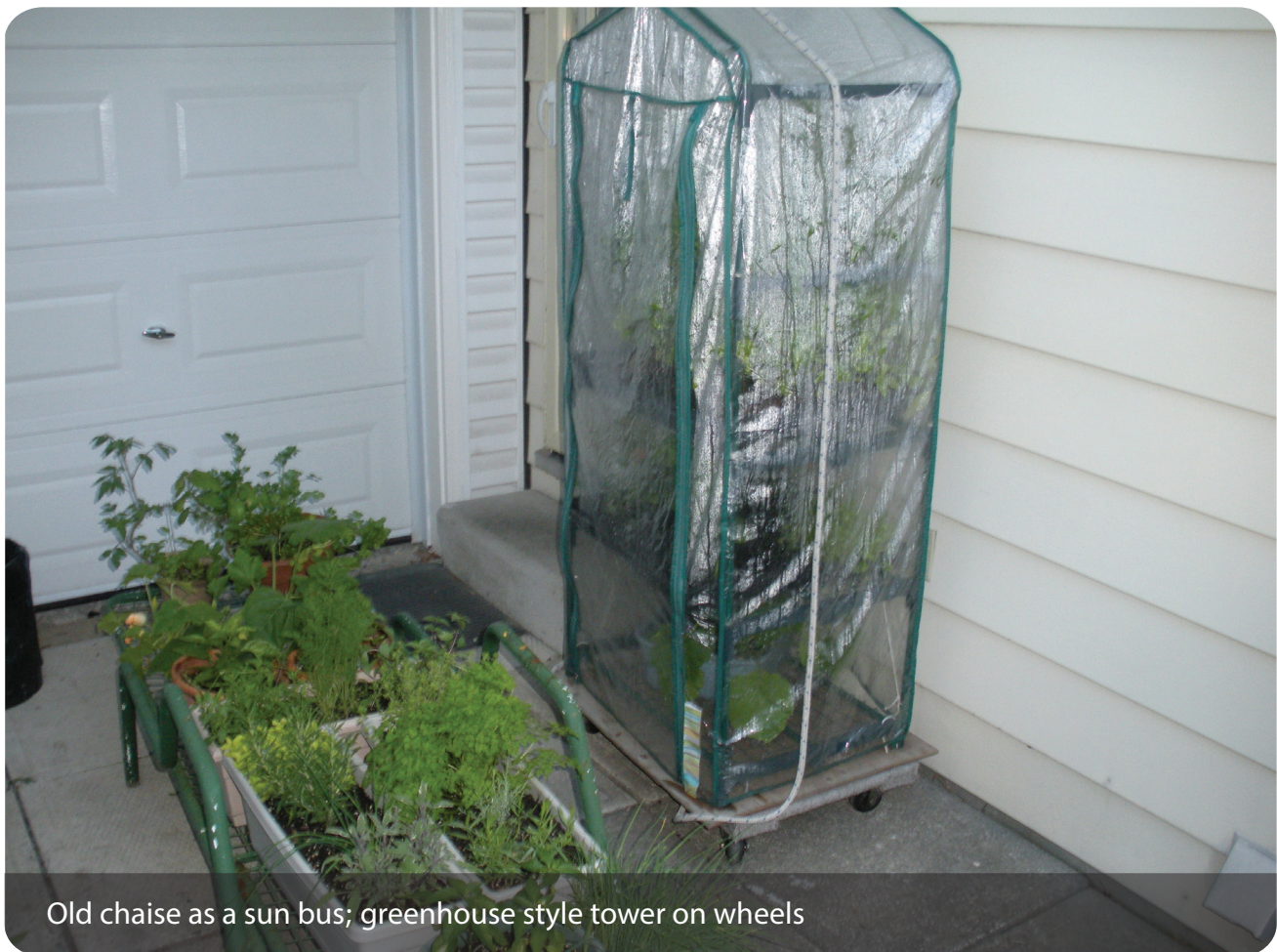
Note: for some gardeners, scissoring is hard to do – why cut a thriving plant?? – they look so good!! Be strong! If you leave all three, there may not be enough food or root room and all three may suffer. However, you could transplant 2 of the 3 seedlings into separate pots if you wish to keep them all.



Wine bottle on a terracotta low flow spike to water tomato & basil

“Hardening Off”

As the time to transplant outside approaches remember to allow for the “hardening off” period (Trays outside in weak sun and protected from the wind. Increase the amounts of time slowly from one hour to full outside). We use a plant tower with three shelves and a plastic cover to protect the plants from the wind or a cold draft. The tower is on a 4-wheeled dolly so we can pull it about into the spring sun or into shelter as the need arises. We also use an old chaise lounge as a sun bus. In cold weather or high wind we shelter the chaise and the tower in the garage – on two occasions, high winds have had disastrous effects on our tower. Imagine a tower full of 6 seed trays tipped on its side – we were not amused!



Old chaise as a sun bus; greenhouse style tower on wheels