TURN A PALLETE INTO A VERTICAL GARDEN

adapted from lifeonthebalcony.com

Find a Pallet
The first thing you need to do is—obviously—find a pallet. I’ve had good luck finding them in dumpsters behind supermarkets. No need to be squeamish. It doesn’t smell. At least, it doesn’t smell that bad. Don’t just take the first pallet you find. You’re looking for one with all the boards in good condition, no nails sticking out, no rotting, etc. If you intend to put edibles in your pallet, be sure to find one that was heat-treated as opposed to fumigated with pesticides.

Collect Your Supplies
For this project, you’ll need the pallet you found, 2 large bags of potting soil, 16 six packs of annual flowers (one six pack per opening on the face of the pallet, and two six packs per opening on the top of the completed pallet garden), a small roll of landscape fabric, a staple gun, staples, and sand paper.

Get Your Pallet into Shape
Once you’ve dragged your pallet home, give it a once over. Are any of the boards a little loose? Is the wood chipping in places? Nail down any loose boards, and use sand paper to smooth down any rough spots.

Let the Stapling Begin!
Decide which side of the pallet will be the bottom when the pallet garden is completed and leaning against the wall. You are going to be covering the bottom, back, and sides with landscape fabric, leaving the spaces between the slats and the top uncovered (you’ll be planting flowers in the uncovered spaces).

Lay the pallet face down. Roll the landscape fabric over the back. Cut two identically sized pieces that are long enough to go from the top edge of the back of the pallet and wrap all the way around the bottom, plus a few extra inches.

Hold the two pieces of landscape fabric together as if they were one piece of fabric. Fold over the top edge by one inch and center it on the top board of the back of the pallet. Staple the fabric into place near the top edge of the top board. Smooth the fabric out to the left and right and pull it taut. Staple the fabric down on the top, right edge of the top board. Repeat on the left side. Fill in between those three staples with one staple every two inches along the top edge of the top board.
When the top of the landscape fabric is securely attached to the top, back board, smooth the fabric down, and repeat the process along the bottom edge of the bottom board, except don’t fold the fabric under, leave a long flap on the bottom.

Pulling the fabric tautly along the bottom, fold the cut edge under, and staple the fabric down along the front edge of the bottom. Smooth the fabric out to the left and right and staple every two inches along the front edge of the bottom.

Now for the sides. Start near the bottom and fold the excess fabric inwards as if you were wrapping a present. Fold the cut edge of the fabric under and staple it down near the front, bottom edge of the side facade. Smooth the fabric out and place a staple every two inches along the front edge of the side of the pallet. The fabric should be taut but not in danger of tearing. Repeat on the other side of the pallet.

You should now have a pallet with landscape fabric wrapped around the sides, back, and bottom. Place more staples along the spine of the back side of the pallet, and anywhere else you think the fabric needs to be held down so that soil can’t creep into places you don’t want it to go.

Now for the Fun Part–Planting!

Bring the pallet close to wherever it’s final spot will be and lay it down face up. You’re going to plant it while it’s laying flat on the ground.

First slide the plants into what will be the top. Plant everything very tightly, you should have to practically shoe horn the last plant into place. Now that you have capped the top, pour the entire first bag of potting soil on top of the pallet. Push the soil into the pallet between the slats and smooth it out so that the soil is level. Repeat with the second bag of potting soil.

Push potting soil into the bottom cavity, so that there is a trench directly below one of the bottom openings. Plant six plants in the trench, so that they are very tightly fitted into the opening. Repeat with the other bottom opening. Now push the potting soil up against those flowers you just planted, making a trench beneath one of the openings in the second row. Plant your flowers tightly in that opening. Repeat for all the remaining openings.

When you’re done planting, you should have plants that are completely covering every opening (i.e. there shouldn’t be any place for soil to fall out). There should also be soil firmly pushed into every part of the pallet where there aren’t plants.

Caring For your Pallet

Now, I’m going to tell you what you should do, and I what I always end up doing (which is what you should not do). You should leave the pallet flat on the ground for a couple of weeks (watering when needed), so that the roots can start to grow in and hold all the plants in place. I can never wait though, so I always tip the pallet upright a few days after planting. Some soil does fall out, but it seems to be okay. But I think it would be better if you left it to settle and only tipped it upright after a few weeks. Do as I say, not as I do.

Water your pallet regularly, they dry out quickly. Pay special attention to the bottom two openings, they seem to be the driest. Fertilize with water soluble fertilizer added to your watering can (follow package instructions for amount and frequency).
WHICH SOIL IS RIGHT FOR ME?

Growing veggies from seeds:
3 parts: 300 Mix/Seed Starting Mix as a base
1 part: Organic Compost or Worm Castings to add structure & nutrients
1 part: Vermiculite or Coir (Shredded Coconut Husk Mulch) to hold moisture

Growing flowers/perennials in containers:
2 parts: 500 Mix, a great base mix for containers & window boxes
1 part: Leaf Compost, gives the garden a boost of nutrients

Growing veggies in containers:
2 parts: 300 Mix as a base
1 part: A mix of Organic Compost and/or Worm Castings to add body and nutrients, and Perlite and/or Vermiculite to help hold moisture.

Growing in really big containers:
2 parts: Top Soil and/or 500 Mix as a base
1 part: A mix of Organic Compost and/or Worm Castings to add body and nutrients, and Perlite and/or Vermiculite to aid water retention and drainage.

Growing in raised beds:
2 parts: Good, light Top Soil
1 part: Mixture of Organic Compost and/or Worm Castings to add body and nutrients, great for drainage.

Improving soil in an established garden:
Natural Humus, Dehydrated Cow Manure, Mushroom Compost, Leaf Compost
10. Why do some people call tomatoes fruits? Because botanically speaking they are fruits but by law they are categorized a vegetable (something to do with taxes). Call them whatever you like.

9. What types of tomatoes are there?
   • Early vs. Late (some fruit in July some in September)
   • Paste vs. Slicers (cooking or raw)
   • Determinate vs. Indeterminate (read on)
   • Hybrid vs. Heirloom (a matter of taste really)
   • Cherry vs. Beefstake (little versus big)

8. What’s Determinate versus Indeterminate mean?
   • Determinate fruits (notice that I just called them a fruit although they are in the vegetable section of the farm) tend to ripen all at once, tend to be smaller plants and flower clusters have only two leaves between them. They don’t always need staking.
   • Indeterminate tomatoes have three to four leaves produced between flower clusters, need staking or caging and will fruit over a longer period.
   • Special hint: You can get indeterminate type tomatoes to set fruit earlier by pinching off the tips of the main stems in early summer.

7. What the heck is an heirloom tomato? I don’t want some old seeds you guys have had around for years? And what’s wrong with a hybrid? I thought hybrids were good?
   • Hybrid varieties are plants that have been cross bred to take the good qualities out of one variety and cross it with good varieties of another. Sort of like children. . .in theory. Unfortunately what some people consider the good qualities you get are usually as a result of giving up some other better quality, like taste.
   • Heirloom varieties come from seeds that have been passed down for several generations through a family (of plants, not people although in some cases of exceptionally cheap people). We believe they are more interesting, weird, hard to grow, have lower yields, but oh the flavor and the fun of growing something that is a tomato that maybe doesn’t even look like a tomato in fact that can be down right ugly.

6. Where should I plant my tomatoes?
   Full Sun • Open to good air movement • Loam to Sandy Loam well drained fertile soil • Soil pH 5.8-7.5

5. How much room does it take to grow a tomato?
   • 24 to 36 inches in the row OPTIMALLY (and we know we are in the city and space is a luxury)
   • 36 to 48 inches between the rows. Minimally 2 feet all around

4. How deep should I plant my tomatoes? Bury Them! Bury tomato plants deeper than they come in the pot, all the way up to a few top leaves. Tomatoes are able to develop roots all along their stems. You can either dig a deeper hole or simply dig a shallow tunnel and lay the plant sideways. It will straighten up and grow toward the sun. Be careful not to drive your pole or cage into the stem when staking.

3. Why Mulch? Allows soil to Retain Moisture • Reduces blossom end rot • Cleaner fruit • Reduces rain splash • Promotes early, larger fruits • Easier to harvest • May help reduce fungal problems

2. To Stake or not to stake? Stake all indeterminate varieties as they get rangy. Use cages, stakes, pantyhose, wooden teepees, or whatever you think works, but keep those leaves up of the ground and keep air moving through the plant!

1. Why the heck would I put cracked egg shells into my soil or under my tomato plants? Egg shells contain calcium which breaks down slowly and helps reduce calcium deficiency that results in blossom end rot. A small round brown spot on the very bottom of your tomato that grows into the outright ruination of all your hard work.
Decorating window boxes in the fall can be a fun task. Many window box owners find that changing their window boxes to match the seasons is an enjoyable activity that can keep their window boxes and houses looking fresh with the seasons. This Workshop will provide you with some great fall window box ideas that will help you determine the best way to decorate your home for the holidays.

One of our favorite fall window box ideas is to incorporate a Thanksgiving type theme into the window boxes. This can be achieved with an assortment of pumpkins, corn stalks, squashes, and flowers and leaves with autumn colors in them. Steer towards reds, oranges, and browns to match the color of the changing leaves in your yard. It’s also a great way to decorate the home for visiting family over the fall long weekends.

In addition to festive decorating in the fall, there are also many plants and flowers you can grow that will thrive in the fall conditions. Some of my favorites are Ornamental Cabbage, Kale, Asters, and Pansy’s for a nice trailing effect. A good mix of both vines and colorful flowers can create a great combination in a window box. Often, a flowering centerpiece can be used to create drama or add a personality highlight to the box. There’s no end to the possible combinations you can enjoy.

**Mums:** Mums offer great blocks of color.

**Ornamental Cabbage and Kale:** Cabbage and kale plants come in purple, pink, and white. Their colors intensify as weather gets colder, and they will withstand light frost.

**Sedum:** Sedum plants bloom flowers that turn bronze, and will retain some leaves through the winter.

**Ornamental Peppers:** Peppers come in purple, red, orange, yellow, and green. They will die after the first frost but thrive indoors during the winter.

**Boxwoods and Calluna:** Boxwoods and calluna plants will remain evergreen throughout the winter and can be transferred into the ground.

**Chard:** Chard plants come in a rainbow of colors and look gorgeous when sunlight shines through their leaves.

Some of the best vegetables to grow in the fall for window boxes are broccoli, turnips. Broccoli is a very popular and productive plant even in the fall and turnips will mature quickly allowing you to harvest more often.

No matter what the season: fall, winter, spring, or summer, there are creative window box ideas you can use for fall flowers, plants, and decorating. Good luck and have fun!
DROUGHT TOLERANT GARDENING BASICS

Beyond the west and southwest, where average rainfall is often below 10 inches, drought tolerant landscapes offer a solution to areas of the country that have experienced extended periods of drought. With the right plants, you can conserve water and still have a beautiful garden. Even if you are not in the midst of a drought, there may be an area of your landscape or property that has restricted irrigation due to the logistics of getting water to that area. Grouping drought tolerant plants together in these areas is the perfect solution. Here are some things to know.

Drought-Resistant

Falls into the category of Xeriscaping (pronounced Zeer-ih referring to “dry”, and not “Zero” as in “no water”) and consists of plants that can survive with minimal water throughout their daily lives. This group includes native scrub plants, cactus and many succulents. While they survive under these conditions, their beauty is brief and fleeting, generally after a seasonal rain or two, followed by a long dormant period. With the exception of cacti and succulents, most of the plants in this category are not suitable for general, or drought tolerant landscaping.

Drought-Tolerant

Plants (unlike regular landscape plants that need a regular, consistent supply of water to survive) are able to survive with some supplemental, sporadic watering if an occasional natural rainfall can’t be relied on. These plants include a wide range of perennials and grasses with not only beautiful blooms in a rainbow of colors but also unique foliage colors and textures. When “drought” and “plants” are used in the same breath, often the first plants that come to mind are cacti and succulents. While they can be part of a drought tolerant scheme, there are many additional choices.

The Number One Killer

Of a drought tolerant landscape program is a simple misunderstanding. Drought tolerant plants are only effective once they have become established. Plants fresh from the nursery only have a root system as large as the pot they were grown in, and that's fine up to that point. In the ground, a drought tolerant plant has a complex, wide reaching root system that allows it to take advantage of every morsel of water that becomes available. This means there is a transitional period of up to six months (if planted during the active growing season) in which the newly placed plants will need regular watering and feeding to allow them time to establish a root system that will allow them the freedom of less water. Once they become established, they offer year after year of water wise beauty to your landscape.

Tips for a Successful Drought-Tolerant Garden:

1. Plan your garden by grouping plants with similar cultural requirements. Place drought-loving plants together to create a low-watering zone in your garden.
2. Site your plants carefully. Drought-tolerant plants will either flop or die in soils that are too rich, have inadequate drainage, or are heavily fertilized. For many plants, it is not the cold but the combination of the wet, water-logged soil with the cold that kills them in the winter. Good drainage is important for drought-tolerant plants.
3. Amend your soil with good organic matter (e.g., compost) before you plant to retain moisture. If you have heavy soil, amend with grit or pea gravel to improve drainage. A trowel or an old plastic pot are great tools when you are working with your soil. When held with the point down, the tool becomes a natural extension of your hand as you dig, weed, or make furrows. It is also great for scooping soil out of bags, pots, and containers.
4. Substitute ground covers in areas where it is difficult to grow turf; particularly shady areas or narrow sections of your yard.
5. Space plants properly so that they do not compete with each other for root space, water, or nutrients.
6. Water wisely. Water early in the morning before the heat of the day to minimize evaporation. Allow nature to do her share; you do not need to water your garden after a heavy rain. Watering by hand at the base of plants, with soaker hoses or with drip irrigation, is highly efficient. Oscillating sprinklers tend to be less efficient, but can be used early in the day.

7. Water deeply and less frequently as opposed to shallow and frequent watering. Deep watering means deeper, more efficient root systems on your plants. Do not water your plants unless they need it. To check, stick your trowel 4 inches into the ground and see if the soil is moist. The rule of thumb is 1 inch per week (approx. ½ gallon per sq. ft.).

8. Mulch your garden not only to suppress weeds, but also to retain moisture. A 2-3 inch layer of mulch is more than sufficient for most areas of your garden. Shredded pine bark, shredded leaves, and fine gravel are three options that provide very different looks.

9. Weed your garden frequently in the spring. Rather than trying to tackle everything at once, spend 15-30 minutes weeding several times a week. In addition to getting the job done, you will be spared of unnecessary back pain and exhaustion. Weeds compete with plants for water and nutrients.

10. Most plants take 1-2 years to establish a good root system. They will need to be watered conscientiously during the first year to establish a healthy root system. Once they are established, you will need to consider your soil conditions (e.g., clay or sandy soil), as well as the temperature and age of the plant when deciding when to water.

11. Do not fertilize water-stressed plants. The salts in the fertilizer will burn the weakened, water-deprived roots.

12. Use water-retaining polymers (e.g., Terra-Sorb™) in your container plantings to absorb and hold water.

13. Look for ‘reduced maintenance’ cultivars and blends of turf grasses, including Kentucky bluegrass (Poa pratensis) and tall fescue (Festuca arundinacea) and fine fescue (Festuca rubra) cultivars that have been bred for turf. They tend to have deeper root systems than other turf grasses and will require less water.

### Plants for Drought Tolerance

#### Sunny Dry Conditions

- Yarrow (Achillea)
- Anise-hyssop (Agastache)
- Ornamental onions (Allium)
- Golden marguerite (Anthemis)
- Sea thrift (Armeria)
- Butterfly weed (Asclepias)
- False indigo (Baptisia)
- Bergenia (Bergenia)
- Boltonia (Boltonia)
- Calamintha (Calamintha)
- Coreopsis (Coreopsis)
- Sea-kale (Crambe)
- Pinks (Dianthus)
- Coneflower (Echinacea)
- Globe thistle (Echinops)
- Sea holly (Eryngium)
- Spurge (Euphorbia)
- Hardy geranium (Geranium sanguineum)
- Blue oat grass (Helictotrichon)
- Little blue stem (Schizachyrium)
- Switch grass (Panicum)
- Mexican feather grass (Stipa)
- St. Johns wort (Hypericum)
- Candytuft (Iberis)
- Bearded iris (Iris)
- Torch lily (Kniphofia)
- Lavender (Lavandula)
- Gay feathers (Liatris)
- Catmint (Neptia)
- Sundrop (Oenothera)
- Oregano (Origanum)
- Penstemon (Penstemon)
- Russian sage (Perovskia)
- Balloon flower (Platycodon)
- Ornamental sage (Salvia)
- Cotton Lavender (Santolina)
- Stonecrop (Sedum)
- Hens and chicks (Sempervivum)
- Goldenrod (Solidago)
- Lambs ears (Stachys)
- Southern lupine (Thermopsis)
- Mullein (Verbascum)

#### Perennials for Dry Shade

- Wood aster (Aster divaricatus)
- Siberian bugloss (Brunnera)
- Barrenwort (Epimedium)
- Sweet woodruff (Galium odoratum)
- Geranium (Geranium macrorrhizum)
- Hellebore (Helleborus)
- Turf-lily (Liriopes)
- Solomon seal (Polygonatum)
- Lady’s mantle (Alchemilla mollis)
- Bergenia (Bergenia cordifolia)

#### Trees and Shrubs for Dry Conditions

- Serviceberry (Amelanchier)
- Fringe tree (Chionanthus)
- Blue mist shrub (Caryopteris)
- Smokebush (Cotinus)
- Butterfly bush (Buddleja)
- Rugosa rose (Rosa rugosa)
- Mock-orange (Philadelphus)
- Ninebark (Physocarpus)
- Beautybush (Kolkwitzia)
- Cornelian-cherry (Cornus mas)
- Witch-alder (Fothergilla)
- American holly (Ilex opaca)
- Bushclover (Lespedeza)
- Koreanspice viburnum (Viburnum carlesii)
- Chaste tree (Vitex)
- White pine (Pinus strobus)

#### Annuals for Sunny Dry Conditions

- African daisy (Osteospermum)
- Black-eyed Susan (Rudbeckia)
- Cosmos (Cosmos)
- Flowering tobacco (Nicotiana)
- Gazania (Gazania)
- Geranium (Pelargonium)
- Globe amaranth (Gomphrena)
- Lantana (Lantana)
- Marigold (Tagetes)
- Verbena (Verbena)
- Zinnia (Zinnia)
SEED STARTING TIPS AND TECHNIQUES

Place Sure Bets
Some plants lend themselves to home germination better than others. Surefire vegetables include basil, broccoli, brussel sprouts, cabbage, cauliflower, chives, leeks, lettuce, onions, peppers, and tomatoes. Some reliable annual flowers are alyssum, cosmos, marigolds, and zinnias. Perennials include Shasta daisies, columbines, and hollyhocks.

Gather containers
Reuse last year’s nursery flats if you have some around. Otherwise, any container 2 or 3 inches deep will do. Punch holes for drainage into the bottom of containers and set them into trays. Protect against plant disease by thoroughly cleaning all used containers: Wash them in hot, soapy water, and rinse with a dilute solution of household bleach and water. If you want a less-irritating substitute for the bleach, use distilled white vinegar.

Pick the right growing medium
You can buy bags of seed-starter mix or you can make your own by blending equal parts of perlite, vermiculite, and peat. Add 1/4 teaspoon of lime to each gallon of mix to neutralize the acidity of the peat. You’ll eventually want to repot most of your seedlings into larger containers before setting them into the garden. But lettuce, melons, and cucumbers are finicky about being transplanted and should go directly from the original containers into the garden. When starting these fussier plants, always add two parts well-aged, screened compost to your mix to give them a healthy beginning.

Sow carefully
Moisten your medium in the containers before sowing the seeds. Next, drop seeds onto the surface of the mix, spacing them as evenly as possible. Cover the seeds to a depth about three times the thickness of the seeds. Some seeds, such as ageratum, alyssum, impatiens, petunias, and snapdragons, should not be covered at all because they need light in order to germinate.

Top it off
Lightly sprinkle milled sphagnum moss, a natural fungicide, over everything to protect against damping-off, a fungal disease that rots seeds and seedlings. In the case of seeds that need light to germinate, sprinkle the moss first and then drop the seeds onto the moss.

Keep seeds cozy
Cover the flats with plastic wrap or glass to keep the environment humid and place them near a heat vent or on a heat mat made especially for seed starting. Most seeds germinate well at about 70 degrees F.

Keep them damp
Mist with a spray bottle or set the trays into water so the mix wicks up the moisture from below.
Lighten up
At the first signs of sprouting, uncover and move the containers to a bright spot—a sunny window, a greenhouse, or beneath a couple of ordinary fluorescent shop lights (4-footers with two 40-watt bulbs). The lights are worthwhile, especially if you live in the North. They provide a steady source of high-intensity light. Short days restrict window light, and your seedlings need 12 to 16 hours of light a day. Suspend the lights just 2 inches above the plants and gradually raise them as the seedlings mature. If plants have to stretch or lean toward the light, they can become weak and spindly. To turn the lights on and off at the same time each day, hook them up to an electric timer.

Cool down
Seedlings don’t have to stay as warm as germinating seeds. Move them away from radiators and air vents, or off the heating mat, as soon they have germinated.

Feed them
If you’re using a soilless mix without compost, begin to fertilize your seedlings as soon as they get their first true leaves. (These leaves emerge after the little, round cotyledon leaves.) Water with a half-strength solution of liquid fish/seaweed fertilizer every week or two. Use either a spray bottle or add the fertilizer to the water you set the trays in if you’re using the wick-up method described above.

Give them room
If the seedlings outgrow their containers or crowd one another, repot them into larger containers filled with a mix that includes compost. Extract the seedlings with a narrow fork or flat stick, and handle by their leaves and roots to avoid damaging the fragile stems. Tuck the seedlings gently into the new pots, and water them to settle the roots.

Pet them
Lightly ruffling seedlings once or twice a day with your hand or a piece of cardboard helps them to grow stocky and strong. Or, set up a small fan to gently, continuously blow on your seedlings.

Toughen them up
About 1 week before the plants are to go outside, start acclimating them to the harsh conditions of the big world. Gardeners call this hardening off. On a warm spring day move the containers to a shaded, protected place, such as a porch, for a few hours. Each day—unless the weather is horrible—gradually increase the plants exposure to sun and breeze. At the end of the week leave them out overnight; then transplant them into the garden.
IMPROVING INDOOR AIR QUALITY WITH PLANTS

Improving indoor air quality with plants and was motivated by this book “How to Grow Fresh Air”. We’ll start off by going over some of the causes of indoor air pollution. Then we’ll discuss how certain plants reduce air contamination. And lastly, we’ll go over a number of specific plants that have been found to improve indoor air quality. We’ll discuss the lighting requirements and watering needs for each of the listed plants, plus some tips for general plant maintenance.

Causes of Indoor Air Pollution:

● Are you familiar with the term Volatile Organic Compounds, or VOC’s? They are naturally occurring chemicals released into the air that are toxic in large amounts. It’s not such a big problem outside, unless they’re in super high concentrations, it’s when they get trapped inside there’s trouble. They are released or “off-gassed” from a variety of sources, even the human body for example. The effects of exposure were first discovered in the 1980’s. We’ll go over a few of the most common, where they come from, and how they affect people when exposed to them over periods of time.

● Most people have a tv, a sofa, maybe some carpeting, or a computer in their homes, right? The bad news is they all emit volatile organic compounds. A few of the major sources of VOC emissions are plastics, resins, adhesives, plywood, and particleboard, which are the main components of most furniture, all electronics, some fabrics, some paper products, and many building materials. You know that new car smell people love so much? That is VOC’s. The good news is that VOC emissions dissipate over time. The older something is, the less VOC’s it produces. Someone is more vulnerable to exposure, the more new stuff they have. Dr. Wolverton, in his book “How to Grow Fresh Air” on sale today, notes that some think there is a correlation between Sudden Infant Death Syndrome and VOC exposure, since many infants are immediately exposed to new furniture and all kinds of new baby things, but there is not enough substantial evidence yet to prove this. Others believe long term exposure leads to increased chemical sensitivity and can increase asthma and cancer rates. The most common signs of overexposure are similar to allergy and cold symptoms: itching, burning eyes, sinus congestion, throat irritation, respiratory irritation, fatigue, headaches, and nervous system disorders. The most common VOC’s are Formaldehyde, Xylene, Toluene, and Benzene. Formaldehyde is by far the most common. It is a known carcinogen and is found in many products because it is used so much as a preservative. Don’t worry, there’s more good news...

How Certain Plants Improve Indoor Air Quality:

● All plants improve air quality in some way, but the big VOC reducing plants are primarily low-light tropicals. These guys have adapted to lower light conditions by working harder through processes called photosynthesis, transpiration, and translocation. Plus, healthy plants attract beneficial microbes that help break down matter into nutrients the plant can absorb and these microbes play a major role in air purification. But, before we get to those little guys, let’s talk more about plants and the processes I just mentioned.

● The main components of a plant’s daily life cycle that aid in its ability to act as an air filtration system are transpiration and translocation. Transpiration is similar to the way a mammal perspires. It’s when a plant releases water vapor from tiny openings its leaves called stomata in an effort to regulate its water level. This action cools the leaves like sweat cools our skin. When the leaves become cooler than the air around them a current is created. This current helps air circulate around the plant. This movement of air helps draw VOC laden air towards the plant. The air is then either drawn to the root area or into a plant’s stomata - which a like little tiny plant mouths on their leaves - where the air then goes through a process called translocation, which is when the plant “breathes in air” through its leaves and releases it around its roots. Both these processes, transpiration and translocation, bring air towards the roots of the plant where microbes take over. Microbes break down the VOC’s into nutrients that the plant absorbs. And viola, cleaner air.
• All plants create a microenvironment around them by controlling humidity levels, increasing air circulation, and attracting good microbes, but of course they are better able to do this when they are healthy, so we’ll talk a bit about some general plant care.

Specific Plants found to Improve Indoor Air Quality

• The great thing about low-light tropics, what most people refer to as “house plants”, is that most of them are really low maintenance. So, for all you folks whose thumbs are not so green, you’re in luck. You cannot grow all plants indoors. Some need to “winter over”. Many plants (especially some ferns, shrubs, trees, and other flowering perennials) need to do this. If a plant is a perennial “zoned” for an area with cold winters, it probably needs to stay outside.

• Knowing about a specific plants origins can tell you a lot about what that plant needs, so it’s good to find out where a plant is indigenous to when introducing it into your home. This can tell you specifically about the temperature, light, humidity, and watering needs of that plant. Whenever you bring home a new plant, the goal should be, to place it in an environment as similar as possible to the one you found it in. Still, you might see a few changes for the worse as they adapt to their new home. Here are a few telltale signs I always look for: 1) Leaves losing their color, or changing in color by losing variegation, reaching, or stretching towards a light source means they are not getting enough light; 2) yellowing leaves can mean too much water, inconsistent water, not enough nutrients, or a combination of all three; 3) leaf loss can be a sign of too little humidity, not enough light, pests, or general stress from a combination of sources; 4) mold on soil, rotting roots, or stems usually comes from overwatering; 5) insect, mold, or fungus infestation of any kind comes from an unhappy plant - healthy plants are much better at repelling pests (they have their own natural insect repellent!); 6) wilting usually means a plant needs water, but can also be from over watering, so check the soil to determine which - if a plant is wilting and the soil is dry, water it, but if the soil is wet, let it dry out.

• Repotting! Is also important indoors. Plants will start to lose leaves, die back, and dry out faster with less root space, so if you notice these signs, plus roots coming out of the bottom of the pot, it’s probably time to repot. Also, watch for salt and hard mineral build up on the pot and top layer of soil. Is probably a good thing to do once a year for plants that are fast growers.

• Dusting the leaves! Is another important task for the indoor gardener. Use a soft, damp, cloth to wipe down the leaves every now and then depending on how dusty your house gets. You can also just put your plant in the sink, tub, or shower, and just wash it off. If too much dust accumulates, the stomata will get clogged and all hell will break loose.

• A quick note about lighting. Of course natural light is best. It’s even better when it’s diffused, or filtered in some way for plants with low light needs. Most high to medium light plants can happily sit in a windowsill with direct sun exposure, but care should be given to make sure heat from the sun is not getting trapped inside the glass and burning the leaves of the plant. High light or Full sun plants need 5 or more hours a day of direct sunlight. Medium light also called semi-sun, or semi-shade plants need 2 or less hours a day of direct sunlight. Shade plants or low light plants can live without any direct sun exposure. All plants need some amount of light. Should you notice a plant is not getting enough sun, artificial light can work too. Low light foliage plants will survive with an ordinary daylight fluorescent bulb inside an ordinary fixture (or lamp without its shade). Fluorescent bulbs give off bluer light. Flowering plants and plants that bear fruit need more red light. You can use an ordinary incandescent or tungsten bulb in an ordinary fixture if it has lower light needs for plants that like red light. Higher light fruiting and flowering plants may need a higher wattage depending on the plant. Just remember, flowering and fruiting plants need more red light or warm light, while foliage plants need more blue or cool light. Blue light also helps with growing healthy leaves, stems, and immune systems, so it’s best to use a combination of both during different growth stages for flowering and fruiting plants.

• Pests: The most common pests to watch out for are spider mites, mealy bugs, scale, and aphids. Mealy bugs are the easiest to spot. They look like fuzzy white patches that like to hang out where the leaves or branches connect to the stem of a plant. Aphids are a little smaller, but still visible. They are small green insects that take over the leaves of a plant. Scale is slightly harder to detect, but they look like little brown bumps on the stems, branches, and bottom of leaves. They are brown or red oval shaped bugs that cover themselves with a waxy substance for protection when they’ve found a comfortable spot on your plant. Then they just hunker down and suck the life out of the plant. If you see a brown or reddish bump on the stems, branches, or bottom of your plant’s leaves try to scrape it off. If it comes off in a little waxy ball, you have scale. Ick. Spider Mites are the hardest to see because they are so small. They can be red, brown, yellow, or green, but the biggest indicator of whether or not a plant has spider mites is webbing. Theses nasty little guys spin tiny webs all over a plant. All of these pests will kill a plant over time. If you notice leaf loss or little spots of yellow or even worse big clusters of little spots of yellow, then look for signs of these pests. A good cure all is Neem Oil. We have some in stock. It comes in spray bottles and is really easy to apply. You can also use dish soap, or insecticidal soap. Some people use Q-tips with rubbing alcohol. I am a big fan of Neem Oil because it’s so easy and effective. You should quarantine the plant until the infestation is gone, and it’s just good practice to never have any plants arranged in a way that they are touching each other since they need a good amount of air circulation to survive. Just remember, if you have an insect infestation, it’s a sign that your plant is unhappy. Healthy plants have a natural defense mechanism that protects them from harmful insects, so once you have dealt with the insect problem, you need to figure out what made the plant unhealthy in the first place.

• Fertilizing! Plants in pots will lose nutrients much faster than plants in the ground. I personally feel that most house plants do not need a lot of fertilization. Others disagree. Flowering or fruiting plants will definitely need to be fertilized, but I feel that you can really harm a plant from over fertilizing, so I don’t fertilize as much as people say you should. A good mild fertilizer is Neptune’s Harvest Organic fertilizer. It’s concentrated, so it lasts forever and you can adjust the quantities easily. There are a few different ones. There’s the fish fertilizer, the seaweed, and a combination of both. The difference between them is that the fish is better for fruiting or flowering plants, while the seaweed is better for foliage plants. You can use it indoors or outdoors. It’s hard to over fertilize with this brand, but keep an eye out for yellowing and browning around the tips of leaves, which is a sign that a plant has been overdosed.
Here are a few different houseplants in particular that are known VOC reducers.

**Boston Fern (Nephrolepis Exaltata “Bostoniensis”)**  
Origin: Tropical Regions Worldwide.  
Light: Semi-sun.  
Water: Do not let roots dry out! Keep evenly moist and mist regularly!  
Humidity and Temperature: Likes high humidity and temperatures ranging 50-75F.  
Tips: Try keeping it in a sunny location in your bathroom near the shower.

**Dwarf Bananas (Musa Cavendishii)**  
Origin: Tropical Asia and Western Pacific.  
Light: Full sun to semi-sun.  
Water: Keep evenly moist; water less in the winter.  
Humidity and Temperature: Likes warm, sunny, humid conditions 65-75F.  
Tips: Can fruit if given ideal conditions, but this is rare. The leaves are very delicate and will often tear.

**Spider Plant (Chlorophytum Comosum “Vittatum”)**  
Origin: South Africa  
Light: Semi-sun to semi-shade.  
Water and Fertilizing: Allow soil to dry out slightly between waterings.  
Humidity and Temperature: Likes moderate humidity and temperatures ranging 55-75F.  
Tips: Good in hanging baskets, buy make sure you rotate it, so it grows evenly. Propagates by sending out shoots with small plantlets that can be removed and potted, or left to grow on the mother plant.

**Gerber Daisy (Gerbera Jamesonii)**  
Origin: Southern Africa  
Light: Full sun to semi-sun. Bright light is essential!  
Water and Fertilizing: Keep evenly moist, but not soggy! Susceptible to root rot from over watering.  
Humidity and Temperature: Likes moderate humidity and temperature ranging 45-65F.  
Tips: Midday direct light may prematurely age blooms. Will flower all summer outdoors, and will continue to bloom through the winter if brought indoors in the fall.

**Lily Turf (Liriope Spicata)**  
Origin: China and Japan  
Light: Semi-sun to semi-shade.  
Water and Fertilizing: Keep evenly moist.  
Humidity and Temperature: 60-75F  
Tips: Commonly used for outdoor landscaping. Propagates by sending out “runners” from its roots.

**English Ivy (Hedera Helix)**  
Origin: Asia, Europe, and North Africa.  
Light: Semi-sun to semi-shade.  
Water: Allow soil to dry out slightly between waterings.  
Humidity and Temperature: Likes moderate humidity. Does not like high temperatures 50-70F.  
Tips: Will benefit from being outdoors in the spring and summer. Exceptional at removing formaldehyde. Loves to be misted! Can be very invasive when planted in the ground. Use in hanging baskets and topiaries!

**Croton (Codiaeum Variegatum Pictum)**  
Origin: Sri Lanka, Malaya, and Southern India.  
Light: Full sun to semi-shade.  
Water and Fertilizing: Keep evenly moist; water less in the winter.  
Humidity and Temperature: Likes warm, sunny, humid conditions 65-80F.  
Tips: Does not like sudden changes in temperature! Mist regularly to help with humidity.

**Lady Palm (Rhapis Excelsa)**  
Origin: Southern China.  
Light: Semi-sun.  
Water: Keep evenly moist and mist regularly.  
Humidity and Temperature: Likes warm and humid conditions 60-70F.  
Tips: Leaves will turn brown and dry out if there’s not enough humidity.
INTRODUCTION TO TREE PRUNING

A tree may need pruning for a variety of reasons:

· to remove diseased or storm-damaged branches
· to thin the crown to permit new growth and better air circulation
· to reduce the height of a tree
· to remove obstructing lower branches
· to shape a tree for design purposes

Once the decision has been made to prune, your next decision is whether or not to tackle the job yourself. In the case of a large tree where you want to remove big branches in the upper area of the crown, it may be best to hire experts. Large tree pruning, in particular, can require climbing and heavy saws or even cherry-pickers and chain saws. This is a job that should be left to trained and experienced professionals. Never compromise personal safety in pruning a tree.

How To Prune

Targeting a Pruning Cut
Large trees aside, there are many pruning jobs that you can do on your own. In all cases, the key is to prune the unwanted branch while protecting the stem or trunk wood of the tree. Tree branches grow from stems at nodes and pruning always takes place on the branch side of a stem-branch node. Branches and stems are separated by a lip of tissue called a stem collar which grows out from the stem at the base of the branch. All pruning cuts should be made on the branch side of this stem collar. This protects the stem and the other branches that might be growing from it. It also allows the tree to heal more effectively after the prune. To prevent tearing of the bark and stem wood, particularly in the case of larger branches, use the following procedure:

Three steps to pruning large branches.
1. Make a small wedge shaped cut on the underside of the branch just on the branch side of the stem collar. This will break the bark at that point and prevent a tear from running along the bark and stem tissue.
2. Somewhat farther along the branch, starting at the top of the branch, cut all the way through the branch leaving a stub end.
3. Finally, make a third cut parallel to and just on the branch side of the of the stem collar to reduce the length of the stub as much as possible.

A similar procedure is used in pruning one of two branches (or one large branch and a stem) joined together in a ‘u’ or ‘v’ crotch. This is known as a drop crotch cut. Make the first notch cut on the underside of the branch you’re pruning well up from the crotch. For the second cut, cut completely through the branch from inside the crotch well up from the ridge of bark joining the two branches. Finally, to shorten the remaining stub, make the third cut just to one side of the branch bark ridge and roughly parallel to it.
When To Prune

The dormant season, late fall or winter, is the best time to prune although dead branches can and should be removed at any
time. Pruning during the dormant period minimizes sap loss and subsequent stress to the tree. It also minimizes the risk of fun-
gus infection or insect infestation as both fungi and insects are likely to be in dormancy at the same time as the tree. Finally, in
the case of deciduous trees, pruning when the leaves are off will give you a better idea of how your pruning will affect the shape
of the tree.

How Much To Prune

Do not prune more that 25% of a tree’s branches. When deciding how much to prune a tree, as little as possible is often the best
rule of thumb. All prunes place stress on a tree and increase its vulnerability to disease and insects. On no account, prune more
than 25% of the crown and ensure that living branches compose at least 2/3 of the height of the tree. Pruning more risks fatally
damaging your tree. In some cases, storm damage, height reduction to avoid crowding utility lines or even raising the crown to
meet municipal bylaws, your pruning choices are made for you. But even in these instances, prune as little as you can get away
with.

Pruning Tools

Advice regarding tools is pretty straight-forward. Buy the best tools you can afford and keep them in good condition.

Bypass Pruner

Bypass garden pruners are probably the most popular. They make a nice clean cut using two curved blades that bypass each
other in the same manner as a pair of scissors. One blade is sharpened on the outside edge and it slips by a thicker unsharp-
ened blade.

Pole Pruner & Lopper

A versatile pole pruner that can be attached to any standard-thread extension pole. Includes 14-inch pruning saw blade and
1-inch lopper.

Folding Pruner

A versatile, folding pruning saw that can be attached to any universal extension pole for long reach. Lightweight and robust.
After each tree you prune, remember to disinfect your pruning tools in a solution of 1 part bleach to 9 parts water followed by
cleaning with soapy water and then drying. Tree diseases are easily spread by infected tools. Finally, if you’re not skilled in the
use of tools like chain saws or if the pruning job is more than you’re capable of managing, hire an expert. Safety first.
GETTING YOUR GARDEN READY FOR SPRING

1. Choose a location
   • Pick the sunniest spot in your space
   • With good drainage and that is level
   • Get a soil test: Get your soil tested by the Massachusetts State Cooperative Extension office: http://www.umass.edu/plsoils/soiltest/. Or at the very least do a pH test from a kit.

2. Amend your soil:
   • Good soil has an even mixture of clay, sand, and silt, with 5-10% organic matter. Most Philadelphia soils have excess clay, so add humus, sand, and compost two weeks before planting.
   • For the first year, and every three years after, invert soil to a depth of 18 inches to incorporate organic matter, especially if using a mechanical tiller.
   • Don’t forget micronutrients. NPK is great for growing season but has a short term in the garden. Magnesium, boron, calcium are all essential for good fruit set and pest resistance.
   • Get rid of all debris!

3. Planning your planting: What kinds of vegetables are good in small spaces and how can you make the most of your space?
   • Think about how many tomatoes or squash you can really eat when planning your garden.
   • How many hours of sun does your plant need? Tomatoes and other fruiting veggies need at least 6 hrs, but 8 is better. Greens need less hours of direct sunlight. Strawberries, lettuce and kale can tolerate some shade.
   • Keep garden beds narrow for easy access. 32-36 inches is standard.
   • Organize your garden around a common scale for easy planning.
   • Order potato, garlic, and specialty seeds early before they sell out.

4. When to plant: Pay attention to seed instructions!
   Radishes, greens, beets, herbs can be sown every other week to keep a constant supply ready for harvest. Peas must be planted in the spring around St. Patrick day. Tomatoes will die or be stunted if put in the ground before the risk of the last frost. Pay attention to the number of days it will take for your plants to mature and plan ahead for the last frost.
   • Direct seed your: Radishes, carrots, cutting lettuce, beans, beets, melons
   • Start indoors or purchase starts for: Tomatoes, peppers, cukes, squash, head lettuce, broccoli, cabbage, onion, leeks, thyme, rosemary
   • Companion planting, shade and good use of space: Tomatoes and lettuce: use the tall tomatoes to provide some shade for the lettuce.
   • Know your rotations and keep track of garden history.
   • Give adequate spacing! Thin out competition, learn to love greens!
   • Mulch: Use compost, straw, or coco shells to mulch around plants. DO NOT use wood chips for anything other than pathways.

5. Rotations
Know your main families
   • Brassicaceae – Collard, kale, cabbage, broccoli
   • Solanaceae – Tomato, pepper, potato, eggplant
   • Leguminosae – Pea, bean, clover

Don’t forget the minor families
   • Umbelliferae – Carrot, dill, parsnip
   • Amaryllidaceae – Onion, leek, garlic
   • Cucurbitaceae – Cucumber, squash, melon
   • Chenopodiaceae – Spinach, chard, beet
WHAT EXACTLY IS HYPERTUFA?

Hypertufa (from the Latin hyper (over, excessively) and tufus (crumbly volcanic stone), is a lightweight manmade stone intended as a substitute for natural Tufa rock. Natural Tufa rock is a porous cellular rock found in limestone rich areas and has for centuries been hollowed out and carved for sinks, bath tubs, animal troughs, planters, decorative stepping stones and so on. Hypertufa is made of several different aggregates and mixed with portland cement. It looks like rock, can be cast into almost any shape, is environmentally friendly, very lightweight and can also withstand harsh weather conditions. It is primarily used as garden art and is fairly easy and fun to make. Hypertufa creations are very durable and will last many years with no care.

Why is Hypertufa better than other planting containers?
• Lighter than concrete
• Won’t crack like plastic, clay and ceramic
• Can withstand harsh weather conditions (No need to bring them in for the winter)
• Last for many years
• Retains moisture, so plants thrive even with less frequent watering
• Drains well
• Create mini landscapes in them that can be left outside all year
• Looks great
• Plants love them
• You can make it at home

Hypertufa can be cast into a variety of shapes which, when dry, can resemble ancient stone or aged concrete. There are a number of different recipes to produce hypertufa. Which will you choose depends on what end result you are desiring - Lightweight? More durable? Want to carve it? ...and so on. Hypertufa offers almost limitless possibilities of garden ornaments that can be made. You are limited only by your imagination.

You will need the following:
1. A hypertufa recipe (There are many recipes! See the FAQ for some of the most popular ones.)
2. Fine Particle dust mask
3. Dishwashing gloves
4. Disposable latex or plastic gloves
5. A measuring container The “parts” container you use is the container you fill with the different ingredients. It can be a cup or a bucket, or anything in between. It is a volume container.
6. A plastic mixing container (a flat plastic pan or tub is preferable to a tall, deep one)
7. A bucket of clear water and a small container to dip the water
8. A prepared mold, form or idea for free form
9. Mold release product, if using a mold
10. Plastic wrap, or old dry cleaner bag or garbage bag to cover your work
11. The time to come back to your project and mist with water when needed
12. A shady place to keep it out of direct heat or sun
13. A barbeque brush, wire brush or other bristle to rough up the surface
14. Carving tools - chisels, files, nails, etc. to carve into the project if you wish
15. Patience for, at the VERY least, several hours to a couple of days, prior to removing your project from the form or mold and finishing the surface
16. Optional: a small tub or wading pool to set your project in to cure after it has dried for a couple days (drying is different from curing). This step allows the hypertufa to gain strength during the curing process.

Tips:
To any of the recipes, you will need to add water - a little bit at a time until the mix is just wet enough to hold a fist size without much water squeezing out or the mix slumping through your fingers. Let the mix sit a short time so that the additives (peat, perlite, vermiculite, sand, etc.) can soak up a bit of the liquid. Add a little more water, if needed.

If you want to add colorant to any of the mixes, remember that dry colorant is added when all the dry ingredients are mixed. If adding liquid color, add it to your first addition of water.
If you want the mix to be a bit stronger you can add either a small portion of liquid fortifier with the first addition of water or a pinch or two of fiber mesh to the first addition of water, being sure to swirl it around to distribute the fibers (the amount is subject to the size of the project). With fibers, you may end up with a hairy/stubby surface on your finished project. If you do not want a chia pet, burn the fibers off with a small torch.

Be sure to use a release agent in your mold for hypertufa. Another way is to cover your mold with a thin layer of plastic before putting the hypertufa in. Plastic forms can be sparingly coated with concrete mold release, cooking spray, Vaseline, WD40, cooking oil, motor oil, etc.

You can purchase large bags of perlite and vermiculite at a garden warehouse, co-op, concrete supply company, and farming supply stores. The cost savings is very good. Peat, perlite and vermiculite all come in various grades. Choose the grade you like best.

Wear rubber dish gloves when thoroughly mixing your dry ingredients and the wet mix. Use the thinner disposable gloves for finer work. Use a mask made for fine dust and WEAR IT while measuring and mixing dry ingredients, and whenever you create dust during the finishing process. The mask can be reused several times. Remember that cement is a bonding agent and once in contact with moisture, begins to harden. As you are breathing, in and out, minute amounts of moisture in your lungs mix with the air all the time.

I mix concrete and hypertufa with my hands, encased in (generic brand) Playtex Living Gloves. Take off your rings, bracelets, watches and necklaces. Put on your FINE particle dust mask and secure it. Keep it on until your mix is finished. You can use tools to mix if you wish, but I have found that there is nothing that mixes better than your hands. You can feel lumps, scrape out corners, turn over the mix, etc. much better with your hands than any other tool.

Mix in a flat, rather than tall pan (dishpans, mortar mixing tubs available at HD or Lowe’s, old kiddie wading pools, etc.). It’s MUCH easier to move the heavy mix in a flat pan and it is also easier to get into all those nooks and crannies where unmixed stuff hides. Forget 5 gallon pails - they are awkward, my back can’t take reaching down into the bottom of those things and if you are mixing a lot of stuff, your gloves won’t be long enough.

Whenever possible, mix on a worktable, plywood on sawhorses - anything that brings the mixing up to waist height rather than YOU bending over it.

Measure the portland cement first. If it has hard lumps in it, stop and go buy a fresh bag. It has most likely absorbed moisture and gone bad. Use it at your own risk. Same with the UGH bagged stuff. Always store cement or UGH bagged mix in SEALED plastic containers like rubbermaid or 5 gallon pails (MUCH easier to move). I store mine in doubled plastic bags INSIDE of the SEALED 5 gallon plastic pails. It’s humid here....

When mixing concrete or hypertufa, first, thoroughly mix your dry ingredients (even if you use the UGH bagged stuff - it settles). Keep mixing for several minutes until EVERYTHING is mixed through and through. Get into the corners and all over the bottom of your mixing container because the unmixed stuff is hiding there, I assure you!

When the dry stuff is thoroughly mixed, MEASURE your liquid (I REALLY hope you’re using an acrylic admix instead of just water...HONEST - it makes a BIG difference) and add HALF of it to the dry stuff. Start mixing. It will be very lumpy and difficult to mix, but do it anyway - squish and squeeze. After all the stuff is EVENLY moistened, add a QUARTER of the REMAINING liquid. Work it in until the mix is evenly moistened. Check those corners and hiding places again, feeling for lumps and moosh them into the mixture. Continue adding liquid in SMALL amounts, mixing thoroughly after each addition, until the mix is the consistency desired for your project. When in doubt, err on the dry side.

If you are pouring your mix into a mold, as with concrete, the consistency should be like THICK pancake batter. Brownie mix is too thick and cake batter is too thin. It should be JUST pourable. You should be able to scoop up the mix in your cupped hands and not have any running through your fingers.

If you are making hypertufa for application to a mold, the mix should be thicker than brownie mix - more like soft cookie dough so you can pack it into or onto the mold you are using.

If you are making hypertufa for freeform sculpting or handmolding, the mix should be like REALLY stiff cookie dough.

It is much easier to ADD liquid to a mix that is too thick, than to scramble for dry ingredients to “tighten up” a mix that’s too wet. This is PARTICULARLY true with concrete.

Just because you used a certain amount of liquid today does not mean that you will use the exact same amount the next time. Relative humidity of the air and ingredients as well as the temperature have a LOT to do with this. Always measure and ALWAYS start with only HALF the liquid, then gradually add, mixing and mixing after each addition.

Allow the mix to rest for about 10 minutes after it looks “right.” Concrete (hypertufa, too) has to go through a stage called hydration, where all the dry stuff is getting wet and beginning to react chemically. With concrete, this is the stage when the mix begins to bubble. This is a good thing. Don’t be in such a hurry that you rush this process, or you’ll be sorry with hypertufa and REALLY sorry with concrete. “Thump” your mixing container sharply on the ground or worktable (if you’re being kind to your back) several times to release air bubbles and settle the mix. The mix should begin getting warmer - this is good - it’s chemistry in action.

1 part Portland cement
1 part peat moss or Coir
1 part perlite or vermiculite
PLANNING AND BUILDING A VEGETABLE GARDEN FOR SMALL SPACES

1. Choosing your location:
   • Sunniest spot in your yard
   • Good drainage and level
   • Get a soil test: Get your soil tested by the Massachusetts State Cooperative Extension office: http://www.umass.edu/plsoils/soiltest/

2. Choose the type of garden that is right for you:
   Raised beds: Stake out your rectangle with string, till your soil and dig topsoil from paths into 4 foot wide beds. Pull out clay clumps. Mix in 50% compost or mushroom soil. Don’t step in your beds once they have been dug!
   Raised beds with sides: Your bed should be 8 to 12 inches deep and the frame should be sturdy enough to hold the soil that will be placed in it. Screw the planks of wood to 2”x2” or 4”x4” corner posts using 4 screws per board (2 at each end to attach the boards). For better stability sink the corner posts 6 inches into the ground before attaching the side boards.
   Get creative in building your beds, but use caution in selecting materials. Used railroad ties, landscape timbers, or treated 4X4s can be laid on the ground and stacked in log cabin fashion to the desired height. Another fine option is to use old tires, large rocks, or even whole trees to create your borders.
   Tall raised beds: Are great if you have no soil, it is contaminated or if you can’t spend a lot of time bent over. Build them 2-3 feet high and line bottom with rocks for drainage and then put compost and soil in the top foot.
   Container gardening: If you have a small amount of space, no soil, or little sun you can put your veggies in containers. Move your plants around so they get enough sun. Grow peas up a fence and plant flowers or herbs in the front of the pot.

3. Planning your planting: What kinds of vegetables are good in small spaces and how can you make the most of your space?
   Think about how many tomatoes, beans and squash you can really eat when planning your garden.
   How many hours of sun does your plant need? Tomatoes and other fruiting veggies need at least 6 hrs, but 8 is better. Greens need less hours of direct sunlight.
   When to plant: Pay attention to seed instructions! Radishes, greens, beets, herbs can be sown every other week to keep a constant supply ready for harvest. Peas must be planted in the spring around St. Patrick day. Tomatoes will die or be stunted if put in the ground before the risk of the last frost. Pay attention to the number of days it will take for your plants to mature and plan ahead for the last frost.
   Direct seed your: Radishes, lettuce, string beans, beets, basil, cilantro, parsley
   Start indoors or purchase starts for: Tomatoes, peppers, cukes, squash, melons, broccoli, cabbage, onion, leeks, thyme, rosemary
   Companion planting, shade and good use of space:
   Tomatoes and lettuce: use the tall tomatoes to provide some shade for the lettuce.

4. Mulch: Use compost, straw, or coco shells to mulch around plants. DO NOT use wood or plastic mulch for anything other than pathways.
FERTILIZING WITH WORM CASTINGS

Vegetables and Annual Flowers
Line bottom and sides of plant holes and seed furrows with 1-2” of worm castings. Set seed/plant in place and cover with soil. Side dress during growing season at a rate of ½ cup per plant or 1 cup per linear foot of row, once every 2 months.

Potted plants, seeds, seed flats – New
Use 1 part worm castings to 3 parts of potting soil mix.

Perennials
Work ½ cup worm castings into the soil above the root zone, taking care not to damage the shallow roots. Apply in spring, early summer, and fall.

Potted plants, window boxes, or hanging baskets – Established
Add ½” worm castings to top of soil. Mix in, taking care not to damage shallow roots. Water well, repeat every 2-3 months.

Roses, trees, shrubs, and berries – New or freshly transplanted
Mix 1 part worm castings to three parts soil. Surround newly dug holes with mixture. Spread roots over mound of the mix in the hole and center.

Roses – Established
Mix 4 cups into the soil 2-3” below the surface of each plant. Repeat every 2-4 months.

Lawns – New
Apply 10 pounds of worm castings to 100 square feet of lawn. Work lightly into the topsoil. Mix in grass seed, cover with shredded straw and keep it watered.

Lawns – Established
Distribute as a top dress at 4 pounds per 100 square feet.

Casting “Tea”
Soak 1 part worm castings in 3 parts water for 24 hours or more. Mix several times. Water as usual with casting tea. Casting tea is excellent for fruiting, flowering or difficult to access potted plants. Do not drink casting tea.

Compost Piles
Spread thin layer of worm castings between each new layer of material to be composted. This will hasten the composting process.

Note: Worm castings will not burn plants, but remember: a little goes a long way.