

THE VERTICAL GARDENING GUIDEBOOK

*How To Create Beautiful Vertical Gardens,
Container Gardens and Aeroponic Vertical
Tower Gardens at Home*



THE VERTICAL GARDENING GUIDEBOOK

HOW TO CREATE BEAUTIFUL VERTICAL GARDENS, CONTAINER GARDENS AND AEROPONIC VERTICAL GARDENS AT HOME

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This detailed book will teach you everything you need to know about vertical gardening! Whether you want to build your own free-standing vertical garden, a wall garden or a vertical aeroponics garden, this book will teach you everything you need to know!



Here's a picture of one of my vertical aeroponics gardens at home!

Join us on Facebook to join the Vertical Gardening community online and share your insights, experiences and get your questions about Vertical Gardening answered. Join us at: <http://on.fb.me/Hml1NU>

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Introduction

Gardening is a topic that is very popular these days, especially with the down economy and skyrocketing food prices. For many people, gardening is a way to save money and eat healthy. Unfortunately, not a lot of people have acres of land or even a yard to introduce a garden. Over the years, there's been talk about converting to sustainable lifestyles, even in urban areas. This concept has grown into something that many urbanites thought unthinkable – urban gardening.

Vertical gardening isn't a brand new concept, but it is one that is being reintroduced to the modern world. For most, it is an opportunity to grow organic food and live a healthier lifestyle, even with limited space.

The purpose of this eBook is to enlighten individuals who are new to the concept of vertical gardening. It is a style of gardening that can be done on acres of land or a few square feet of space. Hopefully, you will find this book to be educational enough to help you start your own vertical garden.

Let's start gardening!

Tom CorsonKnowles



A beautiful salad prepared from my vertical garden at home on my balcony.

CHAPTER 1. WHAT IS VERTICAL GARDENING?

If you're new to the world of gardening, or just recently found out about this unique way of gardening, you may be curious to learn more about how it all works. First, to clear things up for those who don't know, vertical gardening is just as it sounds – growing plants upwards. But don't all plants grow upward?

Yes, but in a vertical garden, the vegetation isn't planted horizontally like with most gardens. Instead, the plants are grow up the side of an upright structure, such as a PVC board, trellis, wire fence or other supporting material.

Some people even use walls, which work by having a sideways garden. This consists of a tray with soil that is attached to a wall vertically. You can transport plants into its soil once they have sprouted.

Other common names for vertical gardens are green walls, live walls and sky farms. Just as you would think, these are walls that were filled with all sorts of growing life. Some people intentionally plant vines around their walls, so that they can sprout and grow along the walls, giving their property a nice design.



Above is a picture of a small green wall on the side of a house.

However, green walls aren't the only form of vertical gardening. There are many different types of ways to grow a vertical garden. Sky farms are usually found as part of a building and are located in urban areas. Some sky farms are edible, while others are only for decoration. Either way, they make for spectacular views.

Vertical gardening is a simple way to create space in your garden, whether it's in your backyard or on your rooftop. It's a great form of gardening for older people with back problems, since they don't have to bend over to tend to their garden. It also keeps your plants away from most pests, digging pets, weeds and rot.

Who doesn't love the idea of having a beautiful garden without having to till and do other back-breaking garden work? In fact, this is one of the main reasons homeowners all across the world are turning to vertical gardening for a new way to enjoy gardening with a lot less work (but more on that later).

Some people may think that vertical gardens can only be used for vine plants, but this isn't true. You can grow everything from tomatoes and onions to spinach and mustard greens. Perennial and annual flowers can also be planted in this style.

You can get creative with your vertical garden, making it out of just about any materials you can find around your property at local home improvement store. You can even buy some pre-made structures for vertical gardening at specialty stores and web sites include modular trays, mobile living walls, frames, wire cages, gazebos, arches, tripods, netting, poles, hanging pocket shoe organizers and tube planters, which are all great for décor.

You can even get a vertical gardening aeroponics system for about \$500 with only 10 minutes of maintenance a week! More on that in Chapter 11 on aeroponic vertical gardening.

To sum it all up, when it comes to vertical gardening you have the option of either building your own from scratch (for you crafty types!) or buying one that is easy to assemble and use. It's never been easier to start a vertical garden!

It's very likely that you've seen vertical gardens before. They can be found growing in various establishments, including museums, corporate buildings and other architectures that have gorgeous living architectural designs.

How do Plants Grow Vertically?

Some plants grow vertically naturally, such as with certain vining plants. There are some that need a bit of help to get started. If you're planning to grow grapes, tomatoes, cucumbers, pole beans and similar vegetables, then you can easily grow them vertically.

All you need is a trellis or other upright platform that will direct the plants north. Vining plants are commonly found creeping up the side of walls, even without the intervention of humans. Imagine how great your garden could look by directing your vining plants to the areas you want them to grow!



Cucumbers and other vining plants naturally love to “climb” and will happily grow and fill up your vertical garden.

For the non-vining plants, all you need is a simple setup that allows you to grow them vertically. This can be a setup that involves shelves or trays with soil that allows you to insert plants. You can find many different designs for vertical gardens

Remember, you can either build your own or buy some pre-made kits, depending on the scale of your vertical gardening dreams!

Your entire gardening space can have towers, trays or walls filled with vertical gardening specimen. It’s important that you know which types of plants to grow together, because some can be more beneficial than others – especially when it comes to attracting certain bugs (More on that in Chapter 9 on pest management).

Likewise, having the wrong plants near each other can cause enemy bugs to attack your precious plants. Your vertical garden can be used to grow anything you want, including flowers, plants, herbs, vegetables and fruits.

The concept of a vertical garden isn’t hard to comprehend. Once you see how a vertical garden is set up, you’ll see that it’s exactly like a horizontal garden, but a lot easier to start and maintain. Plus vertical gardens take up a lot less space!

CHAPTER 2. WHY PLANT A VERTICAL GARDEN?

There are many reasons why people choose to grow a vertical garden. Whether they're intrigued by the style or require additional space for growing, vertical gardens are definitely an answer.

One big reason why folks choose to plant a vertical garden is because they lack sufficient space. If you live in an urban or suburban area that has a very small yard or no yard at all, you can use vertical gardening to produce a massive amount of food and beautiful plants where conventional gardening may be impossible

Urban Living

If you live in a city, you can still enjoy vertical gardens! Here's how:

Vertical Gardening on Your Balcony or Patio

Don't fret if you have a small condo or apartment in the city that has no green space. The beauty about vertical gardening is that it can be built anywhere you have enough space. With a vertical garden, a foot of space is enough to start a garden!



Vertical gardens work great in small places and you will be surprised how much food you can grow in a tiny space when you grow vertically!

If you have a balcony or patio that has free space, you can transform the entire area into a vertical garden. A lot of people in urban areas have taken to this idea. Just take a look at many of the balconies that you find in major cities throughout the United States. You may see all types of plants growing on them.

In fact, I personally have a Tower Garden® by Juice Plus+® vertical aeroponics system (learn more in Chapter 11) growing on my balcony. It turns my otherwise “dead space” of a concrete balcony into a massive food-producing haven. In just a 2 foot by 2 foot area, my balcony vertical garden produces fresh, delicious, organic tomatoes, mint, purslane, lettuces (4 kinds!), strawberries, cucumbers, watermelons, parsley and snap peas!

That one vertical garden has saved me about \$50 a month in grocery bills too!

Vertical Gardening on Your Rooftop

If you weren't lucky enough to get an apartment that has a balcony or patio, then you may be able to use the rooftop. Make sure to speak with the management of your building to make sure that it's alright. If so, you can begin planning out an area of the rooftop for your vertical garden.

In fact, rooftop gardens are cropping up in urban areas all over the world - both for fun and commercial use.

Video Extra: Check out this video of a chef in New York City who uses Vertical Gardening on the rooftop of his restaurant to produce several TONS of fresh produce every year! You can watch it on Youtube: www.youtube.com/watch?v=72rtc2EaMQA

Suburban Living

If you live in the suburbs and have a small yard or larger, then you have even more options for vertical gardening!

Small Backyard Space

Do you live in a suburban area with a small yard?

Maybe you already have a garden and lack more space to plant additional vegetables, fruits and/or flowers. No matter where you live, you can put vertical gardening to use even if you only have a small amount of space to work with.

It's 100% Eco-Friendly

Individuals who are looking to plant a garden in an economical manner will find vertical gardening to be a great option. These ingenious garden plans can also be very eco-friendly. The benefits of vertical gardening are quite extensive, which is why so many vertical gardens are popping up all over the world.

Vertical Gardens are Environmentally Friendly

One of the best factors about vertical gardening is that it doesn't have a negative effect on the environment. There are various reasons why vertical gardening can be even friendlier to the ecosystem than conventional gardening.

For starters, a lot of the manufacturers of vertical gardening supplies use "green" materials that are biodegradable or recyclable. Since vertical gardens help to keep away pests, less or no pesticides are required to keep them safe.

In fact, some people build their vertical gardens themselves using PET plastic bottles that they saved around the house. The plastic bottles are cut in half and used to filter water that drains from the hanging plants. This prevents water from being wasted, another reason why it's eco-friendly!

Another way to use PET bottles is to cut an opening on the side of the bottle. Pour in soil and plant the seeds of small herbs. The PET plastic bottles can then be screwed into a vertical platform, such as a wall or board using a screw and washer. This can be a great design for an outdoor wall you have in the garden.



Above is a picture of a "bottle garden" using recycled plastic soda bottles.

PET plastic does not contain bisphenol-A but it may contain other hormone disruptors that can leach into the plants and your food so I avoid the use of it personally except for flower gardens.

Surely, you can probably think of many other ways to grow the seeds for your vertical garden, using items like rain gutters and containers. There are many different eco-friendly designs that you can use for your vertical garden.

Vertical Gardening is Economically Friendly

Anyone who is worried about the high costs of starting a garden should rest at ease once they learn how easy and cheap it is to build a vertical garden. First of all, you aren't required to buy a home with a lot of land in order to plant a lot of plants.

If you design your vertical garden smartly, you could have a large garden even if you have limited amount of space horizontally. Whether you're using a yard, balcony or rooftop, vertical gardens are proven to be easy on your wallet – and most gardeners find they're saving enough money on their grocery bills to more than pay for their investment in building the garden.

The amount of money you'll spend on a vertical garden is far less than what you'd spend on a traditional in-the-ground garden. Since there's no tilling of the dirt required, you won't need all of the gardening equipment that is commonly needed.

Then if you set up your vertical garden correctly, you could have it so that water isn't being over-consumed. There are water preservation techniques that are easy to implement into a vertical garden. Simply place something at the bottom to catch dripping water and reuse it, saving you on your water bill.

A common practice is to place a water capturing barrel underneath the rain gutters – which prevents excess storm drainage problems in urban areas. Then you can use all the fresh rainwater to keep your garden healthy if there's a dry spell!

How Many Plants Can You Grow?

The design of your vertical garden is what determines how many plants you'll be able to grow. It's important that you utilize as much of the available space as possible – don't leave any area untouched. For instance, you can hang plants on the walls and grow them in corners and rows throughout the garden space.

The great thing about vertical gardening is that you get to be creative and you can always change things, add new layers and experiment with different designs and types of plants.

The supplies for setting up your vertical garden are fairly cheap as well. You can try being creative and using items that you find around your home or you can go with eco-friendly vertical gardens that you can buy with easy assembly.

You'd be surprised at what you can use that's already lying around your house. There's a lot of competition for vertical gardening materials, so you shouldn't have a problem finding great deals for vertical garden setups. You should go for

materials that are made from biodegradable and recyclable materials. And if you're going to use plastics when growing food crops, I recommend food-grade safe plastic to prevent leaching of potentially harmful chemicals into the plants.

So why do people create vertical gardens?

Overall, they are ideal for urbanites and suburbanites, and they're perfect for people who care about the environment. It won't break your bank account to start and maintain a vertical garden – and you'll find the abundance of fresh food will cut down on your grocery bills significantly.

The benefits of vertical gardening in terms of environmental friendliness, expense and output far outweigh those of traditional gardens, making them a must-have for many. You'd be surprised to know that even people who have sufficient land to garden are turning to vertical gardening methods to make maximum usage of their acreage because they can get better yields growing vertically.

In fact, Dickson Despommier, one of the pioneers in vertical gardening, says

“Vertical Gardening could be the only way to feed the world's growing population without destroying more rainforest for farmland.”

CHAPTER 3. HOW DO YOU PLAN A VERTICAL GARDEN AND PREPARE THE SOIL?

Planning out your vertical garden can be a very fun endeavor that you should be a good bit of thought into. If you're a beginner at gardening, then you will find this information to be very beneficial.

Otherwise, planning a vertical garden is very similar to planning a traditional garden except that you may need to use some different supplies and landscape design to help your garden grow vertically.

You can use the tips below to help plan your vertical garden project.

Choosing a Site for Your Vertical Garden

The first thing you'll need to do is find an area that can be used for your vertical garden. The location of your vertical garden is very crucial. Having sufficient sunlight for your garden is a given, so make sure to time how much sunlight your plants would get per day.

If there isn't enough sunlight throughout the day for the types of plants you want to grow, then you should try to find a different location or consider using artificial lighting if there are no other options. Most balconies and patios receive lots of sunlight throughout the day, unless there is a tall adjacent building or structure that blocks morning and afternoon sunlight.

Keep in mind that some plants can grow to be large (especially plants that live all year round), casting shadows over the other plants below them. Try to make a pyramid from biggest to smallest, so that all of your plants are able to receive equal sunlight. Of course, there are some plants that love shadows, so use this knowledge to plan out which plants will be where in your vertical garden.

Make sure to plan space in your gardening location and design for foot paths so that you can walk around your garden and tend to it once it's up and producing. If you're planning to grow in a tight area, such as a balcony, rooftop or small space in your yard, then you will need to design your vertical garden in a way that will allow you easy access.

Sounds obvious, I know, but I've seen people "wall off" parts of their yard with huge tomato plants or cucumber vines and then have to rip them out and start over with a better design. Just a little bit of thought ahead of time can save you a lot of money, time and effort once your garden is growing!

Vertical Gardening Tip: You might want to draw a simple picture of your

vertical garden design. It doesn't need to be fancy at all, but just get the dimensions of your space and choose which plants you want to plant where. Drawing it out can help make the planning process a whole lot easier!

Inside Your Home

Indoor plants have always been popular with nature lovers. Why not try vertical gardening inside of your home?

It's already a growing trend throughout the world, simply because it gives more room for plants and you can keep animals and bugs away from your vegetables, herbs, fruits and flowers. The only thing you need to do to ensure their survival is to choose a location in your home that receives lots of sunlight.



A vertical gardening panel like the one pictured above can be kept indoors and moved outdoors when the weather changes.

If the vertical garden is mobile, you can move the garden outdoors on your patio or balcony to get extra sun for a few hours and then bring them back inside (although that can be a lot of work depending on how big your garden is). Grow lights can be used indoors as well.

Indoor vertical gardening isn't for everyone, but if you've got the space you can make it happen! Aeroponics vertical gardening kits like can also make indoor vertical gardening a whole lot easier (See Chapter 11 on aeroponics for more info).

Patio Vertical Gardens

If you don't have yard space to grow a vertical garden, you can plan on using an available patio, deck or balcony instead. Patios can be just as effective for growing a vertical garden. As long as it gets enough sunlight throughout the day, you should have no problem getting things set up. Just research the types of plants you want to grow to see how you should design your garden for maximum plant production.

Since you are limited in the amount of space that you're able to use, you're going to have to get creative with the type of structures that you use. Some ideas include trellises, arbors, pyramid-shaped assemblies, fencing, tripods and containers. If you are going to be planting vining plants and others that spread rapidly, you will find vertical gardening on your patio to be quite successful.

To maximize the usage of space, you can use hanging containers, upside down planters and baskets that can be hung on railings, canopies or arbors. Having a row of plants on shelves can also produce more space for other structures you may want to use.

You can also use vertical planters like the one pictured below to grow more in a small patio space.



Choosing the Type of Structures to Use for Your Vertical Garden

As mentioned, there are many different types of structures that you can use for your vertical garden. There are a multitude of possible setups for the different types of plants that you'll be growing.

It's important to note how heavy your plants will become and how much weight the structure is able to handle so that your vegetation will have enough support as it grows. The structures you use should be anchored into the ground, so that it's not easy to tip over by passersby and your growing plants.

This is especially important when growing heavier vining plants like melons, pumpkins and squash. These plants absolutely thrive in vertical gardenings and you would be surprised how big and fast they will grow. All of these plants love "climbing" with their vines and lots of sunlight and I've seen 40 pound pumpkins growing from a vertical garden – so make sure you've got enough support for when the big fruits come!

Trellises

One structural option for your vertical garden is a trellis. These are small enough to fit in almost any space and can hold different types of plants. You can make it yourself or purchase it from a store.

Trellises can also be attached to a wall in your garden or staked into the earth for better support and the design prevents mold from spreading disease throughout your plants. Trellises have a nice design and can be combined with other forms of garden structures. Plants that grow well on trellises and tripods are those that have tendrils, such as pole beans.



This trellis is supporting several bean plants and is one of the simplest vertical gardens you can create.

If you decide to plant heavy plants on your trellises, make sure that the trellis you use is made of either wood or metal. Lighter plants can be used on metal trellises as well. Try arranging your plants in a pyramid shape. To keep your trellis in place, you can stake it to the ground using poles or stakes made of wood or iron.

Wire Fences and Poles

If you want an organized vertical garden that is filled with many types of vining plants, like peas and green beans, then wire fences and poles are your best bet. These types of plants may need a bit of help creeping up vertically. You can simply tie up the vines along the poles and wires and they will do the rest.



If you already have a fence set up, you can plant crops next to it that will grow upwards using the support of the fence. You can also just build your own using some simple chicken wire or other type of fencing material.

Arches

Another great structure that fits nicely in gardens is arches. These can be used for plants that are heavier, such as vining plants like grapes.

Arches can also be used for plants that climb or hanging baskets of plants. Your vertical garden can look like a typical garden with beautiful garden furniture and arches, making anyone want to lounge out in the yard on a warm day and enjoy the spectacular view.



This arch is completely covered with beans! Arches make for a beautiful, simple vertical garden design and can be a lot of fun.

Pockets

Pockets can be purchased at the store or you can make them yourself by using the shoe pockets that are commonly found hanging in closets (holes will need to be drilled to allow for aeration and water drainage). The pockets should be 15 inches by 24 inches, which can support up to 20 pounds of dirt. Pockets can be used for planting small perennials and edible plants.

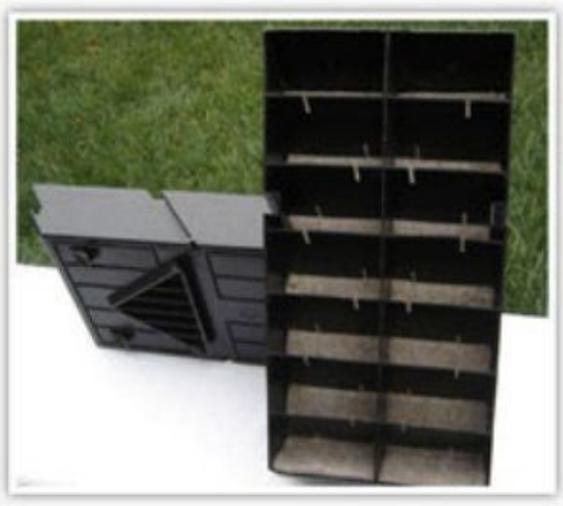


Pocket bags like in this picture above can also support a small vertical garden – in this case with lots of fresh greens!

Trays

Trays are rectangular in shape and are divided into 30-degree angle individual cells for planting. There are holes at the bottom that allow air and water to seep through. To make your tray look unique, you can make or buy a frame of your choice to go around it.

Gardening trays that were designed for vertical gardening come with brackets that allow you to easily mount them.



Trays for vertical gardening like the ones pictured above can be mounted on a wall which is often how small green walls are made at home. Just make sure your wall or siding of your house can support the weight!

If you keep the base of the tray on the ground and attach some screws, nails or clips to fasten it to the wall it should hold up fine.

Hanging Pots

The design of pot hangers are made so that they are easy to install and nearly invisible. They have hangers that can hold up to 100 pounds. The hangers can be screwed into a wall. The pots are held onto the structure with the help of clamps.



Hanging pots like the ones pictured above can make for gorgeous flower arrangements.

Walls

If you have walls in your garden or plan to build some, you will find that you can have certain plants grow along it. All some vining plants need is a rough surface to attach to. You don't want to use wood, painted or mortar surfaces because plants can cause damage to these types of structures. Brick walls are usually alright, but Ivy vines can cause damage to the bricks so be warned!



Wall vertical gardens can be extremely elaborate like in this picture or much simpler – it's up to you.

Make sure to place your vining plants in an area where you don't mind them spreading. Some plants end up growing vertically too far, reaching the gutters of homes and eventually pulling them down with their weight. Morning Glories are notorious for doing this.

Some of the plants you grow may have to be tied to their structure, such as with tomatoes, otherwise they will spread across the ground – defeating the purpose of vertical gardening.

When you grow plants on the walls outside of your home, it can help prevent your home from getting damaged by acid rain and other pollution, and it helps to keep the soil around the home from flooding because the vertical garden will soak up extra rain water. It creates a great year-round ecosystem that absorbs pollutants and natural gas – naturally!

Planters and Gutters

If you decide to use planters or rain gutters, make sure to purchase them between eight inches and 12 inches so that they're strong enough to support the plants. These can be placed along your wall. If the pieces are too long, you can use a saw to make them the right size.

Holes will also need to be drilled at the bottom of the gutters or planters, which should be around six inches apart. This will allow water to drain, so that the roots of your plants don't end up rotting from sitting in water.



A gutter garden like the one pictured above can be created with just a normal rain gutter and a wire or hook to hold it in place. Just make sure not to place it somewhere that's exposed to strong winds because it could get damaged and your garden could get ruined from a wind storm.

Choosing the Type of Gardening Style You'll Use

There are many different forms of vertical gardening. There are three types of vertical gardens that you can start in your home, including the following:

Traditional – This is the most common way for growing vertical gardens, which uses soil.

Hydroponics – Another form of gardening that is gaining popularity, which uses no soil, only water and aqua-life. This method is expensive to set up. I don't cover hydroponics in this book because it can be very complicated, especially if you're going the aquaponics route and requires a lot of specialized equipment and knowledge.

Aeroponics – A new technique that is picking up momentum in the planting world. This too can be used for vertical gardening and the awesome thing about this method is that it requires no water systems or soil, only nutrient-rich water. We'll get more into this later in Chapter 11.

Choosing What to Grow in Your Vertical Garden

There's a large variety of plants that you can grow in your vertical garden. The site you choose will determine how many large and widespread plants that you will be able to grow. The setup of your vertical garden will also play a role in what types of plants you'll be able to grow.

The most popular plants that are grown in vertical gardens are vine and creeping plants. Even gardeners, who aren't necessarily converting to vertical gardening, use vertical supports like beanpoles and trellises to grow their, gourds, zucchini and peas.

Fruits, vegetables, perennials and annuals can all be grown in vertical gardens. Those that have vines are the best suited, such as grapes, strawberries, Morning Glories, melons and pumpkins. Plants that vine offer higher yields, which is always a great thing. Other plants that you can choose that don't grow vertically on their own can also be grown, including raspberries, roses and tomatoes. Some people even grow small trees on their patios!

If you decide to go with tomatoes, you should choose a variety that is indeterminate because their stems continue growing. Determinates have roots that stop growing after reaching a few feet. Then for the heavier vining plants such as the melon, gourds, cucumbers and the like, you should go with varieties that are smaller. Having heavier and bigger plants can be too much for small supports.

Fruits, vegetables and other plants that you decide to grow that are medium in size can be done with the help of slings and ties. Some use household items which should be placed at the bottom of the plants and tied to the structure. Just try to use ties that are made up of cloth, so that it won't cut into the plants. You can look for nice looking ones that will offer a nice accent to the décor of your vertical garden. Preferably something that blends in well.

Choosing the type of plants you want to grow in your vertical garden should be based on multiple factors, including weather, space, shade and the area you live in. Learn more about the types of plants that grow best in your town. If you're totally new to gardening and not sure, look up a local gardening store and talk to some of the experienced staff there – they'll be able to tell you what kinds of plants grow best in your area and help you find seeds and supplies!

Keep in mind that certain plants grow well together while others don't and some plants grow better vertically, while other plants don't. For instance, vining varieties grow better in vertical gardens than a bush would, simply because bushes are too big. There are some plants that come in the form of vines and bushes, such as peas, cucumbers, squash and beans, so make sure to buy the vine varieties if possible.

Melons and pumpkins are two types of fruits that do well in vertical gardens. These two will need to be supported by slings and ties to grow vertically. Here's a list of the types of plants that are commonly grown in vertical gardens:

Capsciums

Korean Box

Golden Diosmas

Cuphea

Chillies

Lettuce

Mondo Grass

Mandevilla

Chinese Star Jasmine

Daisies

Petunias

Miniature and Climbing Roses

The plants you choose should be based around a root system. As you may know, some plants have a vigorous rooting system that is large and complicated. These

plants require lots of support.

Overall, the plants you decide to grow should be grouped together by similarities. The ones that need a lot of water, shade or sunshine can be placed on their own trellises or walls.

Designing Your Vertical Garden

The main purpose of vertical gardening is to be able to grow lots of plants in a limited amount of space. Making the most of the space you do have, whether big or small is very important. The design of your vertical garden is what will ensure that you do just that.

Start from the Back

When setting up your vertical garden, you should start from the back and work your way to the front. For instance, at the back of your vertical garden, you want to place your lush and productive plants. These will give a nice backdrop for the rest of your garden. The plants that you decide to grow along a wall can also be placed at the back, such as pole beans and other spreading varieties.

To create a nice design for your wall, you can grow vines on your walls that have beautiful flowers. Other plants you can grow include cucumbers, squash and beans, which all grow well together. Again, try to choose smaller varieties at first to avoid having an out-of-control 50-ft long squash monster!

Next in line could be your indeterminate heirloom tomatoes and medium-sized plants. These grow to be a good size and can be pruned into a single vine per plant if needed. This is done by plucking off the vines that grow out of the main vine.

Another variety is the heirloom cherry tomato, which are very tasty. Your tomatoes can be planted in an upside down hanging planter or in a deep container. By hanging your tomatoes, it can lessen the damage caused by harmful insects and make more room in the middle of your vertical garden for other plants that you may want to grow.

Lastly, you can plant your main vertical plants in the front and to the sides of your vertical garden. You can place trellises and other structures that you find attractive around the garden.

Some people grow potatoes in potato grow bags because they produce lovely flowers. These can be placed in deep pots to give more pizzazz to your vertical garden if you decide to do the same. Others grow radishes, carrots and other types of fruits and vegetables in this area. To dress up the sides of your vertical garden, you can install railings or tables, where you can grow even more plant life.

Don't forget that vertical gardening casts shadows for the plants below them. Try planting sun-loving plants on top and shadow loving plants at the very bottom, underneath the vining plants with big leaves.

Preparing the Soil for Your Vertical Garden

Preparing soil for your vertical garden is similar to traditional in-the-ground gardening, but it's a lot easier. For starters, vertical gardens only require small pots or strips of fertile soil. This is enough to give your plants sufficient nutrition to flourish.

With most vertical gardens, you don't need a lot of compost, fertilizer or water. Depending on the design of your garden, watering should be a breeze. You can either use a drip can, irrigation system or watering can. The best part about gardening is that you can make your own compost at home using scraps of other plants, vegetables and fruits that one would usually throw away – especially since you won't need as much soil as in a conventional garden.

Vertical gardens are more exposed to the elements, which means that they tend to dry out quicker, which is a good thing for plants that commonly get fungi growth. You'll need to keep an eye on the soil because it will likely require fertilization (preferably using natural methods rather than conventional fertilizers, but that choice is up to you). Make sure that there is sufficient drainage for the plants. There should also be enough room to allow roots to grow.

If you will be using a raised bed for your vertical garden design, make sure that the soil is between six and 12 inches deep to allow the roots to spread and grow.

What you're growing in your vertical garden will determine how your soil should be prepared. For some plants, certain pH levels should be maintained, especially for acid plants like blueberries, which require soil with low pH levels.

Fertilizing Your Soil Organically

Plants need lots of life in their soil, so you have to make sure that there is plenty of organic matter within it. Fertile soil is the key to life and this is especially so for those delicious veggies and fruits you may be growing.

Before planting anything, make sure to work the soil a bit. The soil should be damp, not too wet. When it's too wet, it will cause the dirt to become compact; the soil should be loose enough for the roots to spread. The organic matter in the soil should make up about 5%, which can be ensured by using a soil test. With organic material, your garden soil will have improved texture, better capacity for holding water, increased fertility, more aeration and drainage and can support more beneficial organisms that live in the soil.

Animal Manure

There are different types of organic materials that you can use for fertilizer. One is animal manure, which has plenty of nutrients. You should apply the manure to your soil months before planting your seeds.

Fresh animal manure is known to cause damage to plants because it sometimes has pathogens that are harmful, along with weed seeds. Stick with manure that is old, prepackaged or composted. Manure that is at least six months old, and that is from an herbivore is best.

Green Manure

Green manure is another option for organic material. This can consist of different crops, including ryegrass, alfalfa and similar plants that are turned over for the process of decomposition. By adding nitrogen, it can help the green manure decompose quicker. It will also keep your soil from being starved of nitrogen.

You can either use your own green manure or purchase it from a gardening store. Some people plant cover crops during the final harvest, which is plowed during autumn or spring. By waiting until spring, the cover crop is able to hold in more soil moisture during snowy cold winters. It is also known to prevent the soil from becoming eroded and it insulates perennial plants.

Compost

Like green manure, compost consists of plant life, but instead of covering crops, it is placed in a bin with soil and fertilizer for the decomposition process. Compost is oftentimes used in place of animal manure. It helps to improve the soil and its ability to retain water. There are also plenty of nutrients in compost, but it has less phosphorous, nitrogen and potassium than manure.



Compost is the stuff of life! Plants need healthy soil to grow so if you're planning to grow on land that's been damaged or compressed, make sure to use good healthy compost.

You can read more about composting later on in Chapter 7.

pH Level of Soil

Depending on the type of plants that you are growing, you will need to have a certain pH level for your soil. Some vegetables require soil that is slightly acidic, between 6.0 and 7.0. Level 7.5 and higher is considered to be alkaline and anything below that is considered acidic. It's important that you pay attention to the alkalinity and acidity levels of your soil because if not at the right levels, it could deprive your plants of certain nutrients, resulting in poor growth. A soil pH test can be used regularly to keep an eye on things.

To make your soil more alkaline, you can use lime. Then to lower your soil to acidic levels, sulfur can be used. This should be done six months in advance, since it takes time for them to take effect. There are also store-bought products that you can purchase that may work faster.

Fertilizer

Just like with manure, you should place down your fertilizer in advance, so that the soil can absorb its nutrients. You can combine this with your compost, since it can give your soil phosphorous, potassium and nitrogen, among other types of micronutrients.

There are different types of fertilizers that you can use for your garden, including manure, fish emulsion and blood meal. Organic materials are lower in phosphorous, unlike with fish emulsion and manure.

If you decide to buy your fertilizer prepackaged, make sure to look at the label to see what the contents are made up of. Some fertilizers have to be absorbed in water before being applied to your garden and others come in the form of granules. When reading the label, you want to check to see how much phosphate, nitrogen and potassium it has. You will find many that are made up of 8% nitrogen, 32% phosphate and 16% potassium.

Make sure that you don't over fertilize your garden because it can cause excessive plant growth, which means you'll receive less yields of veggies and fruits. A soil test can be done to check the nutrient levels of your soil.

After planting your garden, you can place down a nitrogen fertilizer once your plants have already started growing. This should only be done if your soil has been depleted of nitrogen and requires more.

If you are growing tomatoes, the fertilizer should be placed six to eight inches away from the main stem and for onions, it should be placed three to four inches away from the main stem. You can use a store-bought nitrogen fertilizer that is made up of 20 to 30 percent nitrogen, but it should not contain any seed germination inhibitors or weed killers.

If you're growing leafy vegetables, such as cabbage, lettuce, sweet corn and spinach, you can put down the nitrogen fertilizer once the plants have grown between three and five true leaves. Nitrogen fertilizer shouldn't be used on tomatoes, peppers, pumpkins, cucumbers, squash or eggplants until they have started to bear fruit. Doing it too soon could minimize the amount of fruit they produce, or worse, it could prevent them from growing fruit at all.

CHAPTER 4. HOW TO BUILD A FREE-STANDING VERTICAL GARDEN

A free-standing vertical garden can be much easier to build than you might think! There are a couple of ways you can build one, but we'll focus on the two most common and easiest ways.

For a free-standing garden, you will need several feet of space. This works best if you have a small sized yard and grass to work with. It's probably not a good option if you live in an apartment or condo – you may want to use an aeroponics gardening system if you have only a few feet of space to work with.

The first one we'll discuss looks like a fence and can be used as such if you're looking to increase the privacy of your yard, patio or balcony. The difference is that the free-standing structure has a double layer, so that plants can be placed in the middle of the layers.

You can make your free-standing vertical garden as wide and tall as you want it, but just keep in mind the accessibility of it. You don't want to have to climb ladders to reach the top and you don't want to have to bend too low to reach the bottom if you have back problems.

The tools and materials you will need to build a free-standing vertical garden structure are:

- Hammer or drill
- Nails or screws
- Two-by-fours
- Extra wood for small pieces to be cut
- Wooden posts
- Tape measure
- Saw

A free-standing vertical garden is ideal if you don't have a wall or roof to hang your plants. It's cheap to make and quite easy if you've ever worked with carpentry projects. If you don't have any experience, ask your friends or family to come over and help you – it will make for a fun and productive day!

Keep in mind that there are many different designs for free-standing vertical gardens that you can purchase online, but this is only one of the two examples of how you can do it yourself.

Here are the steps to follow to build your free-standing vertical garden:

The Fence-Like Vertical Garden

1. Cut eight two-by-fours into the length of your choice (The length of these boards will be the length of your garden)
2. Cut four wood posts into the height of your choice (The post height will determine the height of your garden)
3. Begin nailing the two-by-fours to the front and back of the wooden posts until it makes four equal rows.
4. Nail smaller cut pieces of wood that are a few inches wide at the ends of the two-by-fours to close them off (This helps provide more support for the structure).
5. Nail blocks of wood every four inches in between the two-by-fours, so that the plant can sit on something inside of the two-by-fours.
6. The final construction can be dug into the dirt like a fence, so that it doesn't tip over and fall.
7. Close up the bottoms of the two-by-fours with a strainer-like net and place your soil and plants inside these nets – you can buy plant hangers or plant holders at any gardening supply store or online.

Below is a picture of the design and layout of the fence-like vertical garden wall. If you need to see the picture in greater detail you can see the [full-size version here on the website](#).

Cuts for each 16" board (4" of loss from cuts are included, not all 4" cuts will be used)

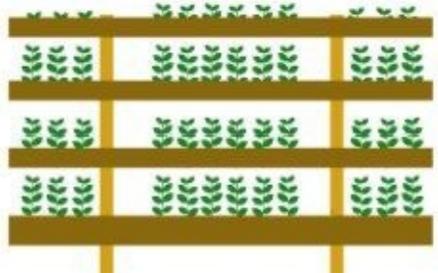
Position from start	Length of cut	Depth (inches)	Number of cuts	Number of plants
0	4	1/2	1	1
4	4	1/2	1	1
8	4	1/2	1	1
12	4	1/2	1	1
16	4	1/2	1	1
20	4	1/2	1	1
24	4	1/2	1	1
28	4	1/2	1	1
32	4	1/2	1	1
36	4	1/2	1	1
40	4	1/2	1	1
44	4	1/2	1	1
48	4	1/2	1	1
52	4	1/2	1	1
56	4	1/2	1	1
60	4	1/2	1	1
64	4	1/2	1	1
68	4	1/2	1	1
72	4	1/2	1	1
76	4	1/2	1	1
80	4	1/2	1	1
84	4	1/2	1	1
88	4	1/2	1	1
92	4	1/2	1	1
96	4	1/2	1	1
100	4	1/2	1	1

The view from the top to show fitting:

The view after support pieces added:

Line each planter with window screen; staple the screen to the wood near the top of each planter. Fill with dirt and plants.

Consider the height of the herbs and plants you want to plant when considering the distance between planters.



When the garden is complete it should look like the picture below.



The Communal Wall Method

This is another way that you can construct your free-standing vertical garden. It is easily moved and can be placed anywhere you have the space for it. You can place flowering pots at the bottom of the communal wall and allow them to creep up the sides.

The structure is simple, four wooden poles are stood upright and attached together by four other wooden poles that are nailed together and placed at the top to hold the other four together. Two more wooden boards are placed a foot from the bottom to hold the structure steady.

At the end, it would look like a room with no walls. A wire mesh is placed on adjacent sides, which is used for your creeping vertical growing plants. Think of a pergola-style structure.

Supplies Needed

10 2x4s at the length you choose

Extra wood for supports

Nails or screws

Hammer or drill

Saw

Wire mesh

Steps

1. Nail together three of the boards at the ends, into the shape of street sign that has two signs. There should be one pole standing upright and two boards that are perpendicular at the top.
2. Cut diagonal pieces of wood to hold up the wood that is at the top of the structure. Nail to the outside of the top board and the pole that ascends downward.
3. Nail the other two boards a foot from the bottom on the north and south sides, using four foot long pieces of wood to nail them to the upright poles.
4. Attach the wire mesh to the north and south sides. The four pieces of wood that were nailed at the bottom can be used as spacers to attach additional wire meshes on the opposite side of the structure for more plants, giving you four walls in total.

When all done the structure should look like the picture below.



The boards you use should be long enough to give you sufficient space, so that your plants are able to get east and west sunlight. Make sure to place your structure in an area that receives at least 6-8 hours of sunlight.

This structure will allow you to enter into your vertical garden through the two open sides, providing you with enough room to water, pluck and seed your garden.

Below is a picture of the communal wall happily supporting a new vertical garden.



CHAPTER 5. MAINTAINING YOUR VERTICAL GARDEN

Building and starting your vertical garden is great, but what would it matter if you don't know how to properly maintain it?

Luckily, one of the other great reasons about vertical gardening is that it is so much easier to take care of than an outward growing in-the-ground garden. There are a few things that you need to frequently maintain to keep your vertical garden flourishing beautifully.

Water

This is a no-brainer. You should have set up your vertical garden in a way that makes watering your plants easy. This could be setting up a water drip system or other automated irrigation system.

Or if you're into doing things the old fashioned way with a watering can, hopefully you set up your garden in an organized way, so that you know exactly how much water each section needs. It's important that you don't overwater or underwater plants.

If you have water drippers installed for your vertical garden, make sure that they remain unclogged from the nutrients you add into the system. This is done to ensure that your plants receive plenty of nutrition. You can find these at your local nursery.

Trimming and Pruning

Some of your plants will be required to be pruned and trimmed to keep from overgrowing and overtaking your vertical garden. Pruning and trimming ensures that certain plants are able to flower and produce fruit.

Whenever you find dead leaves or flowers, make sure to clip them off. Other plants may need to be pruned, so that they grow in the manner that you prefer. Keeping your garden nice and neat will add to the beauty and enjoyment and can also improve the health of your plants.

Checking for Disease

It's important to keep a close eye on the plants in your garden to check for any diseases or plant damage. You want to know exactly when any type of disease hits, so that you can react quickly. It's best to sever the diseased leaves, so that it doesn't spread to the rest of the plant. You also want to watch out for rotted roots, which in this case would have to be plucked entirely.



Above is a picture of brown root rot on tomato plants. If this happens it's best to just remove the plants so the rot doesn't spread.

If you notice that your plants are being eaten up, this could be due to unseen pests. Try to find out what type of pest you have. Then you can research natural solutions for getting rid of them.

How To Make Your Own Organic Spray to Get Rid of Pests and Plant Diseases

You can make a great natural pest control spray at home. All you need is an empty plastic spray bottle (if you don't have one, you can buy it at any home supplies store) and some tea tree oil (which you can buy at most health food stores or online).

1. Combine 4 cups of water with 2 tbsp. of tea tree oil. Mix well.
2. Place the solution in an empty plastic spray bottle.
3. Spray the solution directly onto leaves of plants to combat fungus. You can even help prevent diseases in your plants by spraying the solution on plant roots and leaves routinely!

You can also use the tea tree oil spray as an antiseptic or air freshener in troublesome areas that are prone to mold, mildew or fungal infections.

Maintaining the pH Level and Nutrients of Soil

Ensure to check the pH levels of the soil for your various plants to see if you

need to acidize or alkalize it for better growth. This can be done when you check to see if more nutrients are needed in the soil. You should group alkaline and acid plants together, so that this can be maintained easily. You can also add fertilizer or compost as needed.

Harvest

When it comes time to harvest, you can easily do so without breaking your back. Some plants yield fruits and vegetables quickly, allowing you to pluck a little here and there throughout the summer.

Maintaining your vertical garden is pretty simple, since you don't have to worry about weeding and tilling the ground. You can even start seeds indoors and then plant them when it's warm enough outside. If you have mobile gardens, you can place them indoors during the winter.

You'll quickly see that vertical gardening maintenance is a breeze compared to conventional gardening!



My mom harvesting snow peas from her vertical aeroponics garden at home.

CHAPTER 6. HOW DO YOU GROW YEAR-ROUND WITH A VERTICAL GARDEN?

If you're looking to grow vegetables, fruits, herbs or flowering plants all year round, then you're going to need to set up your garden in a place where it can get the type of climate it needs year round.

There are a variety of ways that you can achieve this. It's important that you consider this before setting up your vertical garden, so that you can do so in an indoor, temperature-controlled environment. Of course, you can have both, an indoor and outdoor vertical garden setup.

Growing a Vertical Garden in Your Home

One of the more popular and more affordable ways of growing a year-round vertical garden is to set one up inside of your home. This can be done throughout your house, including in your kitchen, living room, dining room and any other rooms that receive lots of light throughout the day. You can set up the vertical walls or trellises right in front of the windows, so that they can get enough sunlight.

One simple way to grow plants in your home is to build frames around your windows where you can place your plants. These allow light to come in and provide your garden with plenty of photosynthesis. Another way is to use your indoor walls as vertical gardens. These are great for decorative and edible plants.

Below is an example of a gorgeous vertical wall garden indoors.



Some people use their garages as a vertical garden haven, but this will need to be remodeled to have more windows and aeration, so that your plants don't suffocate in the dark. If you can have vents installed, so that you can cool off and warm up the garage as needed, that will make everything a lot easier.

Building a Greenhouse Outdoors

If you don't have enough space in your home or would like additional growing space for your year-round vertical garden, you can build or buy a green house. This will keep your plants warm enough during the winter to keep them growing.

You'd be surprised at how many plants you could fit into a greenhouse using vertical gardening setups, compared to what would be allowed with in-the-ground gardening. You can produce a large yield of fruits, vegetables and herbs that can be plucked year-round. You may just fall in love with a vertical garden greenhouse!

Grow Annuals, Perennials and Vines

These types of plants grow fast and don't need much help to do so. Even without much light and human intervention, they grow rapidly and produce lots of flowers. You can grow these on your walls in pots or frames.

Make sure to keep the dead wood and leaves trimmed off so that the plant will continue to grow. Keep in mind that annuals grow faster than perennials - if you are going to start seeds indoors, you want to time it correctly.

CHAPTER 7. COMPOSTING FOR YOUR VERTICAL GARDEN

When I was a kid growing up, my parents had a big “compost pile” in our back yard. It was always my chore every week to take out the “compost bucket” underneath our sink.

We always had a very strict policy – if we were going to throw something away and it was food scraps, we had to throw them in the compost bucket. If it was plastic or paper trash, we had to throw it in the trash can. I just thought it was normal to always be composting!

I remember playing out in our big compost pile as a kid. I would always have fun using a pitchfork to toss the fresh food scraps in with the rich, dark compost. Of course, there were times when the smell was so bad taking out the compost bucket... but I do have very fond memories of composting as a young kid!



Above is a picture of my compost pile at my parents’ home where I grew up. That’s good compost!

Compost isn’t just for fun though – it’s one of the best forms of fertilizers that you can use for your vertical garden. If you are looking for a sure way to give your vertical garden plenty of nutrients, and cheaply, composting is definitely the way to go.

The great thing about composting is that you can create it on your own. You can start off with a store-bought package of compost, but you won’t have to keep buying it. Compost is simple to make and affordable – in fact, it can be totally free!

COMPOSTING THE CHEAP WAY

First, we'll talk about the frugal way to create compost on your own. Before we get into that, let's talk about what compost is...

Compost is a mixture of organic matter that has begun to decompose, transitioning into awesome fertilizer for your soil. Some people even grow their fruits, vegetables and herbs directly in compost without any soil. Compost can be made up of dirt, scraps of veggies, grass, flowers, leaves, fruits, mushrooms and other scraps that grow from the ground.

You can place this in a wooden box or container with earth worms, scraps of cut grass, leftover veggies and fruits, then cover it up and let it sit to begin decomposing. If there's a dry spell or drought, you should water the compost pile a little to keep it damp and so that the earthworms don't dry out. The water will also help the bacteria decompose the organic matter – they can't do it if there's no moisture!

Place your compost box in a warm place in your home or outside (preferably outside because of the smell, but there are indoor composting units you can buy that seal tightly and keep the smell at a minimum). You should stir or mix your compost every now and then to allow oxygen to penetrate through the bottom layers.

Once your compost is ready, you can begin using it in your garden. There are soil tests that you can use to see how much nutrients are in your compost. You should try using nutrient-rich organic matter for your compost such as mushrooms, peat moss and scraps of veggies. Of course, to keep things affordable, you can stick with composting the scraps of yard and food scraps that you commonly produce.

COMPOST PILES (ALSO CALLED COMPOST HEAPS)

Another cheap way to create compost on your own is to create heaps of scraps. This is probably the most cost effective because it doesn't require you to buy or build any structures. You simply throw all your old food scraps into a contained pile somewhere in your yard.

A small compost pile could be about five feet wide and three feet tall. The length and size of your compost pile will vary based on how much food scraps and organic material you throw in and how quickly you use it in your garden.

Heaps should be used if you have sufficient space in your yard. Simply add scraps to the pile that you accumulate daily, or keep them in a container and dump them into a heap once you have generated enough. By creating a heap in the fall, your compost will continue to decompose throughout the winter months.

If space allows, you should try to create two heaps of compost. Once the first heap is large enough, then allow it to decompose, while you work on building the second heap. It's not required for you to turn the compost in your heaps, it is entirely up to you. But keep in mind that the decomposition process will take longer if you don't.

Avoid throwing food scraps onto a heap of compost that has not been turned because it will attract insects (mostly flies). Wood can also be added, but make sure that they are chopped up, so that the pile doesn't become brush. Wood takes longer to decompose, sometimes up to a couple of years – but it will make a richer compost when you combine as many kinds of compostable organic material as you can find.

SHEET COMPOSTING

If building heaps of compost isn't something you want to do, you can use this method instead. All you have to do is spread a thin layer of organic materials on an area of your garden – this can be materials like leaves, food and garden scraps and cut grass, all of which should be shredded or chopped before being added. Once this is done, you will then till the layer of materials using a spade, hoe or other tool.

One issue with sheet composting is that it tends to release carbon residues, which will pull nitrogen from the soil to help with decomposition. Also, if you have items in your compost that are high in nitrogen and could end up releasing nitrogen too fast; this could slow down the decomposition process.

The best time to do sheet composting is in autumn. The compost should be spread out in a two inch by four inch layer. The best tool to use for tilling is a rotary tiller, if you're planting a vegetable garden. A garden fork or hoe would be best if you're planting perennial or bulb flowers.



Sheet composting in action.

TRENCH COMPOSTING

Trench composting is known to be one of the easiest ways to create compost from food scraps. All you need to do is dig a hole in your yard that is about a foot deep, then simply chop up and mix the food scraps with the soil you dug up. Afterward, you will place about eight inches of additional soil on top. If the temperature is warm enough, the compost will take between one month and a year to decompose.

There are some people who randomly make trenches of compost, while others create an organized system. One system that is commonly used is to bury food and garden scraps inside of holes that were dug near the drip line of bushes and trees.



Trench composting in action.

In England, they use a trench composting system that involves a three-season rotation, known as vertical composting. The garden is divided up into rows that are three inches wide. Here is how the system works:

Year One – A hole is dug that is a foot wide and then filled with compostable materials. Once the compost is an inch high, the hole is covered with soil. A one inch section is left open as a path right next to it. Next in line is another one inch strip that is used to plant your garden items. In all there are three rows.

Year Two – Unlike with year one, the third section is the one used for the trench. The same steps are used to create the compost. Your garden is planted in the second row and the first row is now the walking space.

Year Three – The section that was used for the trench in year one and the walking path in year two now becomes the planting area, which should be rich because the compost should be fully decomposed. The second space is now the trench and the third space is now for walking.

MORE ADVANCED COMPOSTING SUPPLIES

There are other different methods of composting that you can use that require certain equipment. Some equipment is cheap, while others are more on the expensive end. First on the list are holding units, which are bins that are used to throw your kitchen scraps into.

Little maintenance is needed with most models and they're small enough to be used on of apartment and condo balconies. You should use non-wood materials for your compost in holding units. Just throw in the scraps as you get them, instead of trashing them.

Holding bins are easy to use, but require time to generate ready compost. They don't require you to turn them at all, which is why the process is a lot slower – sometimes taking as long as six months to two years. The process will work much faster if you add earth worms to your compost bins!

Portable units can be purchased that can be turned and aerated. They can be moved about easily. These usually come in the form of plastic, wire fencing / hardware cloth, wood with wire frames or snow fencing.

You can try increasing the aeration of the compost in the holding units by poking holes into the soil and placing ventilating stacks in the center. It will look like pipes sticking out of the middle of the dirt which will allow oxygen into the soil, further decomposing the organic matter.

You will have to place the pipes down before pouring in the compost. The pipes can be made out of wire mesh or even grouped together sticks that are tied together loosely. If you decide to use PVC pipes, make sure that they are about an inch in diameter or bigger. Drill holes throughout the sides of the pipes to give more aeration to your pile.

Some people place down a plastic aeration mat or wooden pallet before dumping in the compost. Since you will be continually placing in new organics into your compost, the finished compost will usually be found near the bottom of the pile.

When needed, you can remove the compost at the bottom of the heap for your garden. Some holding bins have removable doors at the front or bottom, so that this can be easily done. If you want, you can remove the completed compost and place it in a separate bag.

Keep in mind that holding units that are heavier or permanent and have no removable doors will require more effort to create the compost. You will have to remove the finished compost to another container. It's a good idea to have about three of these bins – one could be for finished compost, another for maturing

compost and the third for fresh compost.

You have the choice of buying a holding bin that is made of plastic or wood, or building one yourself using hardware cloth, pallets, metal barrels, limber and tires. These permanent structures can also be made with bricks, rocks and concrete blocks.

If you decide to build one yourself using wood, avoid using those that are penta, creosote or copper arsenate (CCA). Don't use these types of wood around your edible gardens either! These heavy metals can leak into your soil and go straight through your skin, giving you heavy metal toxicity or poisoning! I highly recommend you use wood that is naturally resistant to decay, such as cedar or pine that hasn't been treated.

TURNING UNITS

Unlike typical compost bins, the turning units are made specifically for aeration. You are able to spin this to keep oxygen flowing through your compost. If you're looking to create compost faster then turning units are the kind you'll love. All of the aeration forms bacteria that decompose the compost quicker.

You will find two different types of turning units available – a series of bins or a rotating barrel. By turning the bins every five to ten days and within two months or less, your compost will be ready – if your compost has a good mixture of carbon, nitrogen and moisture.

By heating up the compost between 90 and 140 degrees Fahrenheit, it will kill diseases, fly larvae and weed seeds. This is also a good environment for the compost to decompose. Turning units will cost a bit more than holding units. If you decide to build one on your own, it will take a little more effort upfront.



A small compost turning unit.

Those who buy the turning bins that have multiple bins and rolling balls sometimes find it hard to operate, especially if they have problems with their back or physical limitations. There are some turning bins that are created to have easier use and maintenance. Barrel turning units are smaller in size than the other types of bins, so if you don't require too much compost, then this could be the option for you.

With the turning units, make sure to accumulate your food waste in a container so that when you place it into the bin it is filled to the prescribed level. The container you save it in should be pest-proof.

If you'll be keeping the compost container indoors, there's a neat trick you can use to reduce the smell – just throw a light layer of saw dust on top of the scraps.

WHAT COMPOST SHOULD LOOK LIKE

You want your compost to be rich, dark and earthy like in the picture below from my compost pile at home. It shouldn't have any bad smell from food scraps – the bacteria should have broken all that down by the time you use it for your garden.



CHAPTER 8. HOW DO YOU START SEEDS FOR A VERTICAL GARDEN?

Starting seeds for your vertical garden is just like with starting seeds for traditional gardening methods. If you are new to gardening and starting seeds, then this chapter will teach you what you need to know!

You can either start seeds yourself or you can purchase plants that have already started to grow. Here are a couple of reasons why starting seeds is a great idea:

- It's affordable

- You can do this for any type of plant you want to grow

- The plants usually are of higher quality

- You'll know they're organic

In order for your seed starting to succeed, you're going to need to have the right environment for them to germinate. It's a good idea to start with seeds that start to germinate quickly.

For beginners, it's a good idea to limit the variety of plants that you are trying to create seedlings for. You don't want to work with too many types because you could end up getting frustrated with certain types of plants that take longer or require too much effort to get started.

Just to give you an example, strawberry seeds can take up to 4 weeks to sprout whereas lettuce can sometimes sprout in a day or two.



Starting seeds on your own can be a lot of fun. If you want to bypass this step, you can just go buy starter plants at your local gardening store.

Picking Containers for Your Seeds

You're going to need containers to start your seeds. The type of container you choose is up to you, but should be at least two to three inches deep and contain holes at the bottom for drainage. Some people take the easy route and purchase a seed starting system. If you're going to be growing tomatoes and peppers, you can buy a seed starting system and then transport them into a pot.

Starting Seeds Without Soil

When starting seeds, sometimes you don't even need soil at all. In fact, I recommend sprouting seeds without soil in most cases. This will enable you to avoid problems with insects and diseases. The medium should consist of a blend that is spongy, fine-textured and moist. When sprouting seeds for my aeroponic vertical garden, I use rock wool cubes. You can buy them at any hydroponics supply store or online. More on that in Chapter 11.

You can find ready-mixed blends readily sold at gardening centers in your area or online. These blends consist of vermiculite, milled sphagnum moss and perlite. Since these blends don't have a lot of nutrients, if any, so you will need to add a liquid fertilizer to the mix. This should be done a few weeks after your seeds start to germinate. Once you transplant the seeds into the garden, you can discontinue the fertilizer.

The transplantation of your seedlings should take place after six to eight weeks. They can then be transplanted into a larger pot. It should contain coarser materials with the vermiculite, perlite and sphagnum, such as garden soil or compost. Usually a 1/3 of each item is used in the blend. This mixture will get your transplants prepared for a life out in your garden.

Starting Your Seeds at the Right Time

Certain plants grow faster than others, which is why you should try and time your seed starting accurately. You don't want to start seeds that grow too fast to where you can't transplant them out to your garden right away.

You will need to time rapid growing plants closer to planting time and those that grow a lot slower can be planted earlier, so that they are ready by the time you want to transport them outdoors.

For instance, you can begin growing leeks and celery 12 weeks before you want to transplant them outside into your garden. Then there are sunflowers and cucumbers, which only need between three and four weeks to be transplanted to your outside garden. Most seed packets give directions for seedling and how long it takes before they're ready for transplantation. To better organize your seed starting, you can create a schedule for all of the different plants you decide to grow this season.

If you will be starting your seeds inside of a greenhouse or a room that is very warm, then you can subtract a week or so from the planting date. When starting seeds in very warm temperatures, it can cause the plant to grow faster, which will leave you with a big plant that is ready to be transplanted sooner than you expected.

Some seedlings will have to be transplanted into larger pots after they've been growing for about three to four weeks. If you're growing your seeds in flats instead of individual plant cells, then this is especially so. These plants will need space to allow their roots to grow before being transplanted outdoors.

Starting and Maintenance of Seedlings

The container that you are growing your seeds in should be kept moist and warm. Room temperature water is the best to use. Fill the trays you have purchased with the medium you decide to use and make sure that it is thoroughly moistened.

Fill the tray about $\frac{1}{4}$ to $\frac{1}{2}$ from the top, then plant the seeds. Make sure to check the seed packages to see if the seeds are required to be chilled or soaked before being planted. You'll also need to double check whether the plants prefer sunlight or shade and specific temperatures.

It's important that you create the perfect habitat for your seedlings to get the best results. This is why it's easier to start with a small variety of seeds – because it can be pretty difficult to create multiple climates at once. If you can, you should try growing plants that have similar requirements. But just know that if you do make a mistake and some of your seeds don't sprout, you can always try again! Trust me, we've all made those kinds of mistakes many times in our gardening adventures.

You can either plant the seeds in their own cells or scattered across the surface of the soil. Don't sow the seeds too thickly; they only need a fine layer of soil. Most seeds should be covered three times their thickness, unless the seeds are very tiny or require light to germinate, which in this case would need light coverage.

Always read your seed packets because they should have all the information you need to know about how to sprout them!

A mister or dribbles of water can be used to keep the medium moist and this will ensure great contact between the soil and your seeds. Make sure to put labels on the trays, so that you know which plant is which. Don't throw away the seed packets either - you might want to use them for future reference.

Correct Temperatures for Your Seedlings

The temperature of your seedlings should be based on the requirements of that particular plant. This temperature should be that of the soil, not the air. Most plants grow great in soil that is 60 degrees Fahrenheit, while others germinate best in 85 degrees Fahrenheit. On average, many plants do well in 78 degrees Fahrenheit. I've rarely problems germinating seeds indoors at room temperature – just try to protect your seedlings from any sudden or drastic temperature changes.

It's important that the soil isn't too cold, because this will take the seeds a longer time to germinate or they won't start at all. To heat up the soil, you can use a heating mat or simply move the container on top of a warm refrigerator, television or sunny window sill. Once you start to see sprouts emerging from the soil, it's a good idea to put the plants in a sunny window or under lights within 24 hours.

After germination has begun, you should ensure that the air temperature is kept around 70 degrees Fahrenheit. If the temperature is over 75 degrees Fahrenheit, then this could cause the plants to grow too fast.

This isn't always a good thing because they could end up weak and leggy. It's sometimes alright for the temperature to reach temperatures as low as 50 degrees Fahrenheit because most seedlings still grow well, as long as the soil is still between 65 and 70 degrees Fahrenheit.

Providing Sufficient Light for Your Seedlings

Light usually isn't a requirement for the germination process, but it is necessary once you start to see sprouts. Place the plants in a window that faces south or under grow lights. Make sure to check on your plants every day. If your plants don't receive sufficient light, they could end up growing tall and leggy which is hard to correct.

So how much light do your plants need?

For most, about 14 to 16 hours of light is needed each day. This will give your plants enough food to build a healthy system and well-nourished leaves. You can enhance the amount of light your windowsill plants are getting by placing a cardboard with aluminum on the back of the container to allow light to bounce off and back to your plants.

If you don't have a window that faces south, but still would like to grow your plants indoors, you can use grow lights or full-spectrum fluorescent light bulbs instead. You don't want to use incandescent light bulbs because they give off too

much heat and not enough light – they even lack the blue-spectrum light that is responsible for making your plants dark green and stocky.

When using fluorescent light bulbs, make sure that you place them very close to the plants – about three inches away from the sprouts. You can leave the lights on for about 12 to 14 hours daily. Then for windowsill plants, you may need to offer them supplemental light for a couple of hours – this is especially so during the winter time.

Ensuring Seedlings Get Enough Moisture

During the germination process, consistent moisture is needed. Just make sure that the soil isn't soggy because this could cause your seeds to go rotten. Some people use clear plastic to cover their flats until their seeds have started to germinate. You can find seed starting systems that come with plastic covers that help your plants retain moisture.

Once your seedlings have begun to sprout, you should remove the plastic – you don't want humidity levels to be too high. Make sure to check the moisture level of the soil each day. There shouldn't be too much moisture because it can cause the roots to retard and not grow, plus disease will begin to manifest. It's a good idea to allow the soil to dry out a bit before watering it again – this will help to prevent mold and fungus from growing.

As mentioned, warm water is better to be used than cold water from the tap. Room temperature water would suffice. If you have tap water that is chlorinated, avoid using it right away. You can fill up a jug or watering can and then allow the chlorine to dissipate by leaving it in direct sunlight outdoors for 24 hours.

You should also avoid using water that has gone through a water softener because it contains sodium that can harm your seedlings. The best water to use is always fresh rain water. You can set up buckets underneath your gutter spouts to collect it or get a rain barrel or rain capturing device.

When watering your plants, the water should always be able to trickle down all the way to the bottom of the container – if it doesn't, then you haven't watered it enough. Thorough watering will allow the plants roots to spread out nicely (just don't overdo it and drown the plants).

There's a neat trick I've seen others use to ensure that your seedling containers get sufficient water. First, fill up your sink with an inch or two of water. Then put your containers in the water and allow them to sit there until the surface of the soil feels moist. Then just remove and let them drain and voila! – a perfect amount of water for your seedlings.

Controlling Humidity in the Air

You should try to maintain a level of humidity in your home that is between 50 and 70 percent. When the humidity is too high and the air circulation is poor, fungus will begin to grow and disease problems will ensue.

A very low level of humidity is no good either. When the air is too dry, you can make up for this by placing your plants on capillary matting or a humidity grid. For small rooms, you can open the windows or run a fan to help improve the air circulation for your growing plants.

Transplanting Sprouts to Larger Pots

When your seedlings have developed into sprouts you may need to transplant them into a larger pot if things start to get crowded in your containers. If each of the seedlings had their own growing cells, then this won't be a problem.

Larger pots can be used for overcrowding of plants that are too young to be transported outdoors. You should do this before the roots begin to get tangled in the containers, making them more difficult to transplant. Ripping and tearing the roots can interfere with the plants ability to survive.

Transplantation of your seedlings to larger pots can be done by pulling them up gently by their leaves or roots. Avoid pulling on their stems because they are very fragile – you don't want the stems to be bent or smashed. You don't want to damage too much of the roots either! Just be gentle and delicate with the seedlings and it should work out fine.

You can either use a spoon or your hands to do the transplants. It's easy to separate the stems from the roots when the soil is dry instead of wet. Or you can simply pull a clump of plants out of the soil and then separate them.

When transplanting them to their pots, the soil should have the same depth or a little bit deeper than their containers. There is an exception to tomatoes – you should remove the entire plant and then bury the stem which will then produce more stems beneath the soil.

After your plants have been repotted, make sure that they are well watered and fertilized. They should be placed under grow lights or on a windowsill that is sunny.

Feeding Your Seedlings

You don't have to worry about feeding your seedlings until they develop their second set of true leaves. You don't want to feed young seedlings a full dose of fertilizer because they are too fragile. Only give the young seeds a half-dose until after three to four weeks. Once they're old enough, you can give them fertilizer weekly. Fertilizer can help if you're having trouble starting seeds.

Transplanting Your Seedlings to Your Garden

Now that it's nice and warm outside, it's time to start transplanting your seedlings outdoors. The best way to do this is to start slowly exposing your plants to the outside world. They've been bred on the inside and will need a grand introduction to the outdoors, where the temperatures and weather aren't so kind and predictable.

About a week before you transplant your plants, you should start the weaning process by minimizing the amount of water and fertilizer that you use. Place the pots of plants outside on a protected porch or under a tree every day for about an hour. You can then gradually increase how long you leave them outside. Don't allow them to be exposed to too much hot sun and wind.

Try to choose a day for transplantation that is overcast or drizzling. The wind should be calm this day and the sun not too hot. The transition process can be made easier for the plants by placing a shade fabric over them. It will also protect them from pets, flea beetles and other outdoor enemies. Don't forget to water your transplanted plants well to allow the roots to flourish beneath the earth.

What Went Wrong with My Seedlings?

There are a variety of things that could go wrong with your seedlings if you're not careful. If you followed all of the directions, but a quarter of your seedlings failed to germinate, you can try to troubleshoot the problem. The first thing you should do is check the seeds package to make sure that you followed all of the directions properly, including providing the right amount of light, water and climate control.

Take a look at the soil of the seedlings that failed to germinate – if it is cold and very wet, then the seeds have probably rotted. You can dig them up and take a look to see if this is the case. If the seeds look soft and swollen, then this is a sign of rot. You will need to replant the seeds and this time around, don't overwater the plant.

If the soil was a bit dry, this too could cause your seeds not to germinate. When

the soil is too dry, the roots sometimes don't take hold. Another reason your seeds may not have germinated is because the seeds were old. Make sure that the shop you buy your seeds from sells new seeds. When you replant the seeds, make sure to keep the soil moist.

Seeds Are Leggy and Tall

If your seeds did sprout, but are leggy and tall, then it's likely due to lack of light. Try giving the plant grow light exposure for 15 to 18 hours. Having the temperature too warm can also make your plants leggy. Lower the room temperature and minimize the amount of fertilizer that you're giving the plant.

Below is an example of a tomato that has grown leggy and tall.



Tomato Has Purple Veins on the Leaves

If you look beneath the leaves of your tomato plants and you see purple veins, this is likely due to the plant not getting enough phosphorous. If you've only been giving your tomato plant a half dose of fertilizer during the first few weeks, then up it to a full dose. You should use a fertilizer that has phosphorous content that is at least three. Try looking for fertilizer that is especially made for seedlings.

The Plants Started to Grow then Fell Over

If your plants started out great, but then their stems started to wither until they toppled over, this could be due to a soil-borne fungus known as damping off. It's hard to kill this fungus once it becomes present, but you can counter this by using a soilless medium that is sterile and ensuring proper air circulation.

Mold is Present on the Top of the Soil

If you notice that there is mold growing on the surface of the soil then this means that the medium you're using is too wet. If you act quickly, you can save your plants. Just don't water your plants for a few days and increase the air circulation in the room. Scraping the mold off the top of the soil can be done or transplanting it to a new container with fresh soil or soilless medium is an option as well.

CHAPTER 9. HOW DO YOU CONTROL COMMON PESTS

The first thing you should realize when it comes to gardening is that there is no such thing as a pest-free garden and nor should you want it to be that way! There are good insects and bad insects, but the key is knowing which of them benefits your garden and which of them are harmful.

Learning about the plants you're growing and their predators and helpers can be very helpful in this matter. There are a couple of ways that you can combat harmful pests without using chemical pesticides.

Some of the common insects that are actually beneficial to gardens include:

- Earthworms
- Braconid wasps
- Praying mantis
- Spiders
- Yellow jackets
- Lacewings
- Honeybees
- Syrphid flies
- Tachinid flies
- Ladybugs
- Ground beetles

One method of protecting your vertical garden from the unwanted pests is to grow certain plants that repel them or that attract predator insects that eat them. Below are some of the plants that are known to do just that:

- California poppy
- Broccoli flowers
- Dill flowers
- Parsley flowers
- Capsicum
- Oregano
- Marigolds
- Lemon balm

You should learn about companion plants for each of the plants that you are

trying to grow. This will help to ensure that enemy bugs don't come and eat them up.

Also, make sure to keep your garden free from litter, so that it doesn't act as a breeding ground for unwanted insects. Weeding the grass that is around your vertical gardens will help to keep pests at bay since they like to breed and dwell in weeds.

Non-Chemical Pest Control

If you're looking for an eco-friendly way to get rid of the pests in your garden, you can use other living organisms to do the work for you. You can purchase toads, lady bugs, snakes and other sorts of predators that are known to eat the pests that you have.

There are consumer products that you can buy that are made with all non-harmful organic materials. These are made into sprays that are easy to apply. A lot of the ingredients used are soap, vinegar and certain types of herbs that are known to kill or repel certain pests.

Some people have even made their own concoctions using dish detergent and water or with a mixture of other herbs like onions and hot peppers. There are thousands of natural insect and pest repellants you can use to protect your garden!

Chemical Pest Control

This isn't a recommended option, but it is an option if nothing else works. Chemical pesticides work by poisoning the pests that are disrupting your garden. It can also be harmful to your plants and your health, which is why it's a good idea to try and keep your vertical gardens as organic as possible. Chemical pest control is known to negatively affect the ecosystem, so it should be used sparingly.

Common Pests in Gardens

You may find some of these pests in your vertical garden. Here is a list of them and how they can be ridded of:

Cats

If you or your neighbor has cats that like to come and play in your garden, you may notice that they have a negative effect on your plants. The best way to get rid of them is to protect your growing areas with strong nets.

You can also grow plants that have a strong smell that keeps them away. There are also devices with high-pitched sounds that only cats can hear that you can purchase. If you ever catch them in your garden, you can also spray them with water or chase them away. It wouldn't hurt to buy a pet dog either. Personally, I love cats and enjoy them playing in my garden (as long as they don't hurt my tomato plants!) but some cats may damage your plants so just be aware.

Birds

Birds love to eat seeds, fruits and flowers. Scarecrows can be used and other humane traps. Bird netting is another great option. Or you could bring back the cats!

Aphids

You may notice your vegetable garden getting attacked by an unseen pest, which are likely aphids. They mainly come when your garden has a dry spell, so make sure to keep your garden well-watered. I've found that the tea tree solution spray I shared with you earlier works exceptionally well to ward off aphids.

Caterpillars

These greedy little pests can quickly eat up your garden if you don't keep an eye out. You can try spraying vinegar on the leaves of the plants to kill them or you can remove them by hand one-by-one.

Hopefully, you will be able to keep your vertical garden pest free. A lot of people find fighting certain pests easier because the garden is off the ground. You can also recognize when there is a pest a lot quicker, since you don't have to kneel down to see any damage done.

CHAPTER 10. HOW DO YOU WATER A VERTICAL GARDEN?

Keeping your vertical garden well-watered is important for it to thrive. Watering your plants can be done in a variety of ways, manually or automatically. The great thing about vertical gardens is that you can use irrigation systems.

The beauty of it all is that vertical gardens allow you to conserve water, saving you money and placing less demand on the environment. However, it's important that you regularly water your garden because the roots of your plants need to stay moisturized. Make sure to keep in mind the amount of water each plant requires – and remember that as plants grow, they will consume water much faster to feed their growing leaves.

Vertical Garden Irrigation Systems

This is the best type of watering system to use for your garden because it uses the vertical build of your garden to an advantage. There are a couple of different irrigation systems that you can use. The one you choose will be based on the type of structures you have in your garden and your own personal preferences.

Irrigation Systems with Gravity Fed Drips

This type of irrigation system is very common in vertical gardens. This system is placed at the top of your vertical garden and the water is released with the help of gravity. The water first reaches the top layer of plants and then drizzles on down to the other rows beneath it until all plants have been watered. Then at the very bottom of the vertical garden, there is a collection tray that collects the water drainage from the plants. A pump can be used to recycle this water right back into your garden.

Comprehensive Drip Irrigation Systems

These systems are best used for vertical gardens that require a lot of water. Like its name suggests, it is more comprehensive than the gravity fed irrigation systems. With this type of system, you can have a drip line installed on each row of your vertical garden, so that you can ensure that your plants get all the water they need. Just like with the gravity fed systems, there is a water collection tray at the bottom for water, which can then be recycled.

Using a Pipe Network

Then there are other gardeners that decide to use a network of perforated plastic pipes that run throughout their garden. The water is sprayed onto the plants at time intervals specified on the timer that it is controlled by. This is a good option for people, who are traveling away from home, are very busy or who commonly forget to water their gardens.

CHAPTER 11. HOW DO YOU GROW AN AEROPONIC VERTICAL GARDEN?

If you've never heard of aeroponics as a form of gardening, then you're definitely missing out. This is an awesome way to grow your gardens vertically. There are so many great advantages of growing an aeroponic vertical garden, making it almost nonsensical not to do it. Aeroponics is having a big impact on the vertical gardening community.

So what's so great about vertical gardening with aeroponics? This form of gardening uses absolutely no soil and only about 10% of the water and land compared to traditional gardens. All the water in the system is recycled so there's no runoff which is why you can grow plants with much less water than traditional gardening.

With aeroponics the plants also grow much faster as well (NASA quoted that aeroponic gardens grow at least twice as fast as soil gardens).

Pest control is a lot easier as well because the plants are so healthy they can pretty much combat disease and insects on their own (or at least better than plants in soil).

Aeroponics can be used to grow almost anything, including herbs, fruits, vegetables and flowers. These systems can be placed in small spaces, such as decks, balconies, rooftops, porches and patios.



Above are some baby Alpine strawberries just a few weeks old in my vertical

garden.

What is Aeroponics?

Aeroponics is a form of gardening that requires no soil or other form of medium to grow plants. The name itself is Greek and was chosen because it describes this method perfectly – air labor.

It's important that you don't get aeroponic gardens confused with hydroponic gardens because the two are different. Hydroponics involves growing plants in sand, gravel or water with no soil. Aeroponics is a specialized type of hydroponic gardening where the roots are exposed to the air and then watered with a nutrient-rich water regularly.

Today, aeroponics systems for the home and commercial use have become so sophisticated and easy to use that all you really need to do is set up the system and check the water, nutrient levels and pH once a week or so.

Aeroponic Gardens are Eco-Friendly

Unlike with traditional gardening, which can place a great demand on the ecosystem (especially when harmful chemicals are used), aeroponic gardens are safe for you and the environment.

The greatest benefit of this system is that it preserves water and energy better than any other type of garden. It has been recorded as using 1/10 the amount of water than what would traditionally be needed to grow the same crop. Some have even dropped this number down to 1/20 depending on the climate.

How Aeroponics Gardening Works

The way aeroponic gardens are built allows it to receive lots of air exposure. The garden is literally on a tower that extends into the air, giving it lots of oxygen. The root systems and stems are free of constraints, allowing it maximum growth and root expansion, due to the lack of physical contact and access to pure water.

Since the plant roots are 100% suspended in the air, they are able to get lots of oxygen. The system also provides the roots with micro-droplets of nutrient water. The design of aeroponics helps to prevent pathogens from forming on the plants.

Less Disease in Your Garden

Aeroponic gardening allows plants to flourish without many of the common traditional diseases found in soil-growing plants. Since the contact between plants is reduced and there's no soil in the system, the plants are protected from many common disease. However, it's still possible to see diseases such as blight, mildew, botrytis, bacterial wilt, anthracnose, fusarium and leaf spot so be aware if you see signs of disease.

When plants are placed in soil or other medium, disease is able to easily spread to plants. In the event that a plant does become diseased in an aeroponic system, it can easily be removed in seconds without spreading it to the other plants.

How Plants are Watered

Since aeroponic systems only use 10% of the water soil gardens use, you may be wondering how these plants are watered. The irrigation systems that are used in these systems usually come in the form of misters, sprayers, foggers or gravity-fed drip systems. A good system will have a timer that you can customize to water the plants on a regular schedule.

Benefits of Aeroponic Systems

Here is an overview list of all the great benefits that are associated with growing aeroponic vertical gardens:

- The most cost-effective method of gardening

- Yields more seeds, since the plants grow pathogen-free

- Easy to use, even for first-time gardeners

- Harvests are fast and easy

- Plants receive lots of nutrients

- Eco-friendly because less water is used and no harmful chemicals are needed

- Less nutrient solution throughput is required

Growing Your Own Aeroponics Garden

If this all interests you, then you will find that getting an aeroponic garden started is quite simple. All you need is a vertical aeroponics system, which can be purchased online or at a local gardening supply store.

There are different types of systems available, big and small. You can also try making the system yourself. These systems pretty much resemble a tower. Some people use nothing more than a sealable storage bin, fittings and PVC pipes (just be warned that PVC will leach phthalates and other toxic chemicals into the plants – which is why I never use it for gardening). A pump is also needed to recycle and deliver the water for your irrigation system.

If you wish, you can even transplant your aeroponic plants to the soil without worrying about it going into shock.

Personally, I use the Tower Garden for much of my food gardening.

I love aeroponics systems because they are very low maintenance. They come with everything you need to setup and manage your vertical garden. The kit includes the Vertical Aeroponics Tower which holds 20 plants, the water basin, water pump, a pH testing solution, pH adjusting solutions, nutrient solutions and easy to follow instructions and customer support.



This chef in New York City grows all his produce fresh on the rooftop of his restaurant with about 30 Tower Garden units.

The Tower Garden is also one of the most technologically advanced units on the market and it comes with all the supplies included for just \$499 + shipping.

Currently, the Tower Garden is only available in the United States and Canada. You can learn more about Tower Gardens at www.TowerGarden.com

AFTER YOU SET UP AN AEROPONICS GARDEN

Once you have set up your aeroponics system, place the mesh holders over the growing chambers and begin planting your seeds inside of them. You can usually place between two and three seeds in most kits – but for bigger plants like cucumbers, tomatoes and watermelon, it's best to just plant one seed as they will grow 3 to 4 times faster than normal in an aeroponics environment. Place the growing chambers in the slots of the system, then ensure that the vapor cover is set over it correctly, so that it will receive the mist spray as needed.

Make sure to read the directions of the aeroponics kit to see how much nutrient solution you need to place inside of the system. You will then need to check to see what settings you need to place for your water valves. The kit will come with a hydro controller. After a couple of days have passed, you will know which seeds did not sprout. This will be determined by the type of plant that you are growing.

As the seedlings begin to mature, you will see the roots exposed through the tray. You will need to lift the container to trim the roots using pruning shears and then remove the plant from the chamber.



Like this book? Share it on Facebook!

CHAPTER 12. THE JOYS OF VERTICAL GARDENING

Well, it's been an amazing journey for me to be able to share my experiences of vertical gardening with you. And I want to thank you for spending the time with me to learn more about this wonderful new way of gardening!

I hope you learned a lot about vertical gardening and all the joys that it can bring. Give vertical gardening a try and you will see how easy and productive it can be!

If you're a creative buff or don't mind spending a few hundred dollars to get started, you can have your garden up and producing delicious food and beautiful flowers in no time.

There are so many different things that you can grow in your vertical garden:

Vegetables – cucumbers, pumpkins, squash, tomatoes, lettuce, spinach, asparagus, potatoes, green, red and hot chili peppers, mustard greens and peas.

Fruits – kiwis, strawberries, grapes, raspberries, watermelons and dates.

Herbs – oregano, basil, dill weed, sage, thyme, parsley and cilantro.

Annual vines – trombetta squash, black-eyed Susan, Musica and nasturtiums.

Flowers – roses, daisies, ferns, petunias and Chinese star Jasmine.

This is only a small list of the types of plants that you can grow in your vertical gardens. All types of annuals, perennials and vines can grow right on your patio, rooftop or deck. Making the most of the space you have to use can make a world of difference to your dinner plate.

Imagine being able to pluck fresh herbs and vegetables to make delicious salads and sides for dinner time. Your family will love the variety of recipes you'll be able to manifest in your kitchen.

Depending on what you grow in your vertical garden, you can have everything you need to make your meals full of fresh produce, cutting down your grocery bill partially or. Produce prices continue to climb high, even for nonorganic vegetables, fruits and herbs. If you want to get out of the rat race for affordable organic produce, then you're best bet is to grow your own.

Once you have chosen the types of edibles and non-edibles that you want to include in your garden, make sure to learn all you can about them, so that you can maintain excellent growth. You can purchase a plant book that goes into

greater detail about different plants, including how to grow and maintain them. Knowing the proper climates, watering habits, sunlight and nutrients needed for your plants could make all the difference between having a lush garden and a dying garden.

I even encourage people who have land to plant in the ground to give vertical gardening a try. This method can triple or quadruple the amount of fruits and vegetables that you can yield each season. Even greenhouse efficiency can be maximized with the use of vertical gardens.

If you're really interested in aeroponics gardening, you can try growing plants in your home, a greenhouse or outdoors. They are a bit more expensive at the beginning if you decide to buy an already-made system, but you can attempt to build one yourself to cut the costs.

Whatever type of vertical garden you decide to grow, you will surely have a blast with the outcome. You'll yield plenty of vegetables, flowers, herbs and fruit – you'll be amazed at how easy it is. Especially when compared to traditional in-the-ground gardening.

Create a schedule for the plants you want to grow next season. Start buying seeds and get prepared to start your seedlings before the warm months roll in, then get them transplanted into your vertical gardens. If you have children, you can involve them in your vertical garden project and see their eyes light up!

Have fun and eat fresh!

If you'd like to stay connected and share your experiences with vertical gardening, come join us and like our Vertical Gardening Fan Page on Facebook: <http://on.fb.me/Hml1NU>

EXCERPT FROM THE URBAN GARDENING BOOK

GROWING PLANTS INDOORS

Who said that you have to have plants growing outside?

If you don't have the luxury of having a yard, balcony or rooftop for gardening you can grow plants in the comfort of your own home. Just make use of the windowsills throughout your property. You can build shelves for the ones that don't have a sill. Some people even have a vertical garden on their walls, which can be constructed with shelves or pockets on a board. There are different designs available for these – some you can even build yourself. Another great option is to use a vertical aeroponics system near a window to grow 20-30 plants in a 2 ft by 2ft area. More on that in Chapter 13.

If you don't get enough sunlight coming into your home because of your location, you can opt to buy artificial lighting, called grow lights. Make sure to purchase grow lights that are specifically designed for plants. Not just any light bulb can be used. Also, you'll need to have the right temperature and amount of light spectrum (red, white and blue light) for your plants. Some grow better under red light, while others need the full spectrum.

CHOOSING A SITE THAT HAS PLENTY OF LIGHT OR SHADE

When it comes to choosing a site for your plants, it's important that you know all you can about how to nurture and grow them. This means researching whether that specific plant needs majority sunlight or majority shade. You can set up your urban garden in a way that will allow this to work out for each of your plants. For instance, you can have some plants facing south where it will get plenty of light and others in front of larger plants, so that it will get lots of shade. Not paying attention to this important detail could leave you with shriveled, withering plants that are dying from excessive or insufficient sunlight.

If you're planting from seed, the seed packets should tell you how much sun your plants need. Otherwise, just Google it to find out. For example, you can search "Sun Requirement For Tomatoes" to find out how much sun tomato plants need to produce fruit.

CONTAINERS, WALL GARDENS, WINDOW GARDENS AND AEROPONIC SYSTEMS

The easiest ways to garden indoors are to use containers, an aeroponics system, window garden system or a wall garden. We'll cover container gardening and wall gardening in the next chapter. Aeroponics systems are covered in Chapter 13.

Right now let's talk about window gardening.



Above is a picture of a typical “Window Garden” made using plastic bottles. You can either manufacture them yourself or buy a complete system like those found at windowfarms.com

Here's a complete video tutorial for you if you want to grow your own window garden using plastic bottles: <http://bit.ly/Tvf0UG>

Personally, I don't recommend using plastic bottles for food gardening as the phthalates and other chemicals can leach into the food. I'd much prefer to use food safe plastic to grow to avoid any contamination. But that's just my opinion. If you want to make your own window garden with old plastic bottles, by all

means go for it!



Above is a picture of the Windowfarm system which start at \$199.

LIST OF PLANTS THAT CLEAN THE AIR

The following is a list of amazing plants you can grow indoors that help clean and purify the air you breathe. These plants are perfect for anyone who has allergies or frequent respiratory infections (colds, viruses, flus, etc.). They're also just great for anyone who loves breathing clean air and gorgeous plants!

A_{LOE} (A_{LOE} VERA)

This easy-to-grow, sun-loving succulent helps clear formaldehyde and benzene, which can be a byproduct of chemical-based cleaners, paints and more. Aloe is a smart choice for a sunny kitchen window. Beyond its air-clearing abilities, the gel inside an aloe plant can help heal cuts and burns. You can also make smoothies with the inside flesh of the aloe (just avoid the outer green flesh as it will make you very regular!)



*S*_{PIDER PLANT} (*C*_{HLOROPHYTUM COMOSUM})

Even if you tend to neglect houseplants, you'll have a hard time killing this resilient plant. With lots of rich foliage and tiny white flowers, the spider plant cleans the air of chemicals including benzene, formaldehyde, carbon monoxide and xylene, a solvent used in the leather, rubber and printing industries.



GERBER DAISY (GERBERA JAMESONII)

This bright, flowering plant is effective at removing trichloroethylene, which you may bring home with your dry cleaning. It's also good for filtering out the benzene that comes with inks. Add one to your laundry room or bedroom — presuming you can give it lots of light (south-facing windows are best!).



[End of Excerpt] If you enjoyed reading this excerpt from *Urban Gardening: How To Grow Food In Any City Apartment Or Yard No Matter How Small*, you can grab your copy here: <http://amzn.to/ZEIGNX>

*S*_{NAKE PLANT} (*S*_{ANSEVIERIA TRIFASCIATA} *L*_{AURENTII})

Also known as mother-in-law's tongue, this plant is one of the best for filtering out formaldehyde, which is common in cleaning products, toilet paper, tissues and personal care products. Put one in your bathroom — it'll thrive with low light and steamy humid conditions while helping filter out air pollutants.



SPECIAL FACEBOOK GROUP

Come join our special Facebook group for gardening lovers like you! In this group, we'll be sharing tips, resources and ideas for happy, healthy, easy gardening.

Come join us on Facebook here: <http://on.fb.me/Hml1NU>

ABOUT THE AUTHOR



TOM CORSONKNOWLES is the #1 Amazon best-selling author of *Dr. Corson's Top 5 Nutrition Tips*, *Rich by 22* and *How to Reduce Your Debt Overnight*, among others. He lives in Kapaa, Hawaii. Tom loves to eat healthy and grow his own fresh food with his vertical gardens.

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Follow Tom on Twitter: [Twitter.com/juicetom](https://twitter.com/juicetom)

RECOMMENDED GARDENING BOOKS

[Urban Gardening: How To Grow Food In Any City Apartment Or Yard No Matter How Small](#)

This is a fantastic book for anyone in the city who wants to grow a fabulous urban garden.

[Indoor Gardening: How To Grow Gorgeous Gardens Indoors With Ease](#)

This book is perfect for anyone who wants to grow an indoor garden for food, fun or just to create a gorgeous ambiance in your home. Did you know that some plants can remove as much as 87% of the toxins in your home in just 24 hours?

[Container Gardening: How To Grow Food, Flowers and Fun At Home](#)

This book is great if you want to create gorgeous, fun container gardens at home including detailed instructions for terrariums, growing succulents, bonsais and other fun and unique plants.

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