VERTICAL GARDENING

A STEP-BY-STEP GUIDE TO CONTAINER GARDENING WITH ORIGINAL IDEAS FOR YOUR GREEN PROJECT

DEVON HAINES

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About the book

Gardening is a very well known pastime for people around the world. It gives us a reason for being, for going on regardless of anything that may happen in our lives. I grew up in the countryside, so since I was a little girl, I always enjoyed the landscapes, the greatness of the nature, and the natural resources that we may use in order to make a better living. I kept on changing countries, all through big gardens, small apartments and other confined areas until, recently, I made a place of my own. Lucky for me, now I have my own vertical garden in a big backyard.

Even though I now have all the space I need, I will always remember the days that I was confined in a small apartment and the sheer pleasure that came with harvesting my first small balcony crops. It was amazing, and it is also the reason that I started vertical gardening. It’s the most efficient way of enriching your life and home with useful benefits while utilizing the smallest and most unlikely places available.

I will lead you on a journey that will help you discover the meaning of a healthy, self-organized life. We will start with understanding the meaning and the benefits of vertical gardening. We will proceed with traditional or original ideas for creating the appropriate structure for you, the best advice in choosing the location of your garden, the best choice of plants for you, the soil required, the irrigation system, the right supports, and methods to overcome pests in your vertical garden. You should consider that this is the easiest way to grow plants (fruits, vegetables, or flowers) with less effort, less weeds, and for less money.

I hope you enjoy our journey and that my own experience helps you eventually get to relish your dream garden. Even if I come up with certain already used ideas, don’t forget to bring your own creative spark to it, as your garden should be the most gratifying, self-reliant DIY project of your life.

What is vertical gardening?

Vertical gardening is not a new concept in the world. Since the beginning of time, plants have been a considerable part of our lives. The Babylonian gardens are the best example, even if they are still considered to be purely legendary. Yet no one can contest their usefulness, since they were structured on different levels, which is where the “vertical” in this plant growing method comes from. We must also think of the Mediterranean way of vertically growing plants, for the only purpose of growing food or providing shade in smaller areas, or the classic English cottages covered in ivy or other climbing plants.

THE GERMANS ALSO CERTIFIED the benefits of vertical gardening in our homes due to its ability to retain heat during the winter and cool buildings during the summer. The French gave the entire world the invention of the espaliers. They are mostly used for bearing fruit trees, but in modern days, we can actually use them for all sorts of plants. In the 1980’s, a French botanist, Patrick Blanc, inspired by his travels in Asia, introduced to us his trademark hydroponic system, which became known worldwide and was the most impressive natural way of design. In the 1990’s, some researchers from Canada enhanced the power of this growing system and, since then, vertical gardening continued changing and evolving.

Vertical gardening has certainly become the best way to take advantage of small spaces, use fewer materials, and work efficiently. It is also a very popular DIY project. It’s not only about design and beautiful things surrounding us; it’s also about a practical way of growing food.

In the past few years, vertical gardening has become not only a hobby, but an important part of self-help development tools in what makes for a better living. If you live in the city, with the sheer space of the balcony at your disposal, or if you live in a house with little garden space available, but are very keen on having beautiful flowers, fruits and vegetables all around, then vertical gardening is the way to go for you.

It is the best method to combine work and pleasure in order to achieve your goals in living a natural life. It takes small efforts (much less work), less money and a lot of imagination and practical ideas. With this creative outlet, you can turn your life around.

As I said, it’s not only a hobby, it’s a very practical way of allowing your family to consume fresh food and spend time creating something really helpful, yet full of gratification for ourselves. It is also a way to spend quality time with your family and find ways to educate your children about a less expensive way of living and embrace the era of minimalism. We should take advantage of the smallest thing that we own. We should consider turning a hobby into a real helpful way of securing for ourselves the best quality life ever.

We should consider some important things. The space that we can use, the money that we can spend, the right sunny location of our garden, the soil, the compost to use, and the irrigation system. Also take care when choosing the right plants to grow or seeds or other materials needed, such as supports, containers, trellises, and finding the best ways to overcome pests and diseases.

The necessary space is not that big (on our small balcony, we can arrange the most eye-catching plant wall).We can keep our costs down, as we can use all sorts of discarded materials (use your imagination and you may find zero cost ways to creating yourself a very original, yet productive garden). Or we may use the modern, beautifully designed, and practical supports). The best location is easy to find (it all depends on the sunlight since, it is the most important factor in our choice of plants to grow). The soil is not hard to choose (we must have the best one available).We can make the compost ourselves, in order to spend less and to have the most

natural foods available to our plants. The irrigation system is not that hard to get (even in this case, we may find traditional, less expensive ways, or we may just trust the modern irrigation systems with all their benefits, among which the timer is the most important one).When it comes to defeating pests and diseases of our plants, we may use some traditional remedies, or in some cases, just go along with what our specialist recommends.

Some of you will discover the magic of microclimates. In our modern days, in the end it’s all about a safe, beautiful, carefree and magical special place to call your own. Not only for those who live in overcrowded cities, but even for those who live in the country. We live in a world that is overloaded, that is always in a hurry, and that doesn’t give us the right space and the things that we actually need. At the end of the day, we all need solace, and sometimes the only way to find it is going to our personal gratifying place, which sometimes happens to be a small vertical garden on our balcony, or a beautiful outdoor vertical garden in our backyard.

It is a place that gives us reasons to be proud of ourselves, especially when we started from zero, using only our imagination and good will in order to obtain something really useful, like growing natural fruits and vegetables, or simply something magical like a flower garden. It is a well-known fact that the plants (especially flowers) have a positive effect on our minds. Be sure that nature is the most healing device for our souls, bodies and minds. And adding the results of our work to create something useful, or beautiful may become even more enchanting.

Some of you may also discover the economic power of this plant growing system due to the fact that it gives us the chance to have foods growing all year long. For that, it may take a bit larger space or just the nerve to try it. But for now, we intend to focus on our personal vertical garden.

Vertical structures and containers

In this journey, the best thing is to use your imagination or simply let your kids help you. We all know that they are far more creative than us adults. The first thing to consider is utility, but let's admit that beauty and color add a bit of spice to our lives.

If you go online, you may already find a lot of beautiful, attractive, and innovative ideas for creating a unique and relaxing corner into our home. From there on, we must do our best to create something original and mind blowing.

When we live in an apartment, we have to deal with limited spaces and other obstacles, but they're truly not that hard to overcome. Some important things to consider are light, the appropriate containers, the watering system that we will use and, of course, design. Plants bring oxygen and a feeling of bliss to our lives. That's why, in the past few years, naturally designed walls have become a "must have" product. So, why not do it with vegetables and fruits, which may add a more beneficial touch to our lives, since it will give us the nourishment that we need.

But let's talk about the benefits of a vertical garden. Well, first of all, it helps you save your precious space. The vegetables and fruits are easier to harvest, seeing the thorough organization of your space. A vertical garden benefits the best airing, which is an important contributor to healthier plants and crops. These plants don't have direct contact with the soil of the garden, which will better protect them from soil diseases and pests.

Regarding the light, there's not much to do. You should find the most sunlit spot, like on your balcony (depends on the orientation of your flat), the most sunlit wall inside your home, or simply hang your plants on the kitchen ceiling.

For containers, we have limitless options, starting from those special ones that we can buy in stores to our things discarded into our attics. Don't forget to choose only objects that allow water draining. If not, you may easily drill the ones you find, such as buckets, terra cotta pots, mason jars,

old ladders, shoe organizers, PVC pipes, plastic bottle tops to old drawers, paint cans, clay pots, wood pallets, and conduit piping. Anything that comes to mind is good to use, as long as it has enough space for the plants that we want to grow. Pallets, shelves, old ladders, and drawers are maybe the ideal supports to use. Think that the towering system allows each and every scaled plant to obtain the right amount of water and the needed quantity of light. Hanging terra cotta or clay pots may also be the best solution for lack of space.

In my opinion, the best three ways of organizing your urban garden are:

1. Feet on the ground

YOU MAY USE A DOUBLE staircase, or self-made cedar shelf support, an old narrow wardrobe with drawers, or anything else that may come to mind, or simply buy something already done that you find in furniture stores. The important thing is to make sure that your support is stable enough. For more safety, please anchor it to your wall or ceiling, especially if it’s a high one. Using trellises is also a good way to support your tall plants.

Tiered gardens are an efficient method of urban gardening. It doesn’t need much space, so it’s a good vertical garden idea for your balcony. By layering your garden, you will obtain more space for your plants with less effort possible. Raising plants on top of each other gives you the possibility to obtain more crops in minimal spaces. The containers to use should have different sizing, giving each plant its own space. It’s very easy to do; you

may simply use wooden cases. Set them one above the other, starting from large to small. If you don’t find the materials to make it, don’t worry; there are special tiered garden containers in stores.

Gutter gardens are also an economical method for vertically growing plants. They are a very efficient method for those who live in apartments. It’s almost cost-free, since we can use all recycling materials and they do not require much effort in preparing them or maintaining them, since they will never break or crack. For more safety, we should secure them, tying them with stainless steel cables and stainless steel screws. We may use our imagination in obtaining different sizes, depending on the plants that we want to grow and our available space, and also obtaining a most colorful, original support for our urban vertical garden. They must be well fixed to the ground, due to the fact that we may grow a variety of plants in it.

Pallet gardens are a very original and non-traditional idea for vertical gardening. It’s a very economical method and a very easy DIY method. The first thing we need is a wooden pallet. You may find it in stores or you may actually try to ask some local businesses if they are willing to give you one for free. Once you get one, make sure that is safe enough for you to use. Place it on the ground, take off some slats in order to create enough space for your plants, and add landscape fabric (it’s better to use two or three layers of it) on the backside of your pallet. Secure it to the wood using a staple gun and proceed to create pockets on the inside. Use thick layers of landscape fabric in order to obtain as many as possible and secure it with the staple gun, making sure that the soil will not drop.

Trellis gardens will help you get traditional. It’s all about using wooden structures to support your plants. There are plenty of these structures available in specialized stores, but you may easily get creative by reinventing this method. It’s a method used worldwide to grow vegetables, fruits and flowers and a classic one, considering the fact that native Americans, for example, were using corn to support the beans. In some countries, this is still a natural, cost-free, and productive method to obtain more crops while using less ground.

PVC pipe gardens are also a very efficient method of urban vertical gardening, considering the economical factors, the eccentricity, and the spicy effect on our cluttered apartment. It does not require much effort to build such a support for our vegetables, fruits or flowers. It’s for the best to create a steady support, taking in account that our safety and that of our

children comes first. There are plenty of useful ideas regarding securing these structures. One certain beneficial aspect is the fact that we may use dripping irrigation system on it. And, above all, it offers a lot of extra space. It is the perfect method for growing berries and bushy plants while utilizing the smallest areas available.

Tower shaped supports also give an original touch to our homes. It’s a not that difficult of a DIY method to build up an interesting and eye-catching support for growing our favorite plants. They are suitable for any garden or small balcony.

ONCE YOU HAVE YOUR vertical support well anchored in the most sunlit location of your apartment or balcony, you should start thinking about the plants you want to grow. If you have shady areas, then you must consider growing lettuce, cabbage, and greens. If you are blessed with plenty of sun, your selection of plants is wider. You may grow tomatoes, peppers, beans, potatoes, radishes, cucumbers, squash, pumpkins, and even carrots.

1. Stuck to the wall

WHEN IT COMES TO DECORATING walls with plants, there is no limit to the imagination. There are special metal plates that can be fixed on your walls or your doors if you like, allowing you to place any kind container or pot there, in whatever size or color you see fit. You can design your wall with any shape that you want. You can create a huge green painting, or a heart-shaped panel, or a colorful bookcase or connected box system, or simply using your kitchen containers. Let your creativity go wild!

Pocket-shaped pots are becoming a creative, non-traditional method of designing our homes. You may buy them in stores or you may simply use your imagination in choosing recycling materials with different sizes and colors, adding beauty to your space and serving as an efficient technique to grow vegetables or fruits.

You can give your house a modern touch by using metal supports that you can easily find in any store, or a traditional touch, by using clay pots or recycled cans painted in different colors. You may certainly be original by using wooden pallet supports, recycled PVC pipes, painted plastic bottles, and so on.

Gutter, pallet, trellis, and PVC pipe gardens that were mentioned above (for ground supports) are surely some of the best methods in designing our walls while actually obtaining crops and a lot of gratification in harvesting the best variety of fruits and vegetables. The things to consider are the best supporting methods (safety comes first) and the best location, and the light factor.

ONCE YOUR LOCATION and support are chosen, you should choose the right plants to grow, always taking into account the lighting and the available space between one shelf or another, and between the containers that you chose.

The inconvenience of this method is the impossibility of using the dripping irrigation system. This results in a bit of extra work when you have to water your plants.

1. Hanging from the ceiling

THIS IS CERTAINLY A newcomer in the plant-growing world! The best choice is to use the most original and stylish Boskke Sky Planters. They are available in small and large sizes. It’s made of stoneware ceramic or recycled plastic and this unique irrigation system offers the ultimate solution for us to make the most of our limited space. It provides water to your plants for up to two weeks. And the special locking disc won’t allow the soil or water to drop on our floor. So make space for upside down gardening!

Another advantage is hanging them on the ceiling, hence not adding to the clutter and giving more free space to breathe. The sun factor is not that hard to overcome, since you can place your supports as near as possible to the windows. In addition, the ceiling area is the warmest of the entire house and is also the area with most natural light available. That will offer benefits to your plants.

The most suitable plants to grow in these supports are small ones, such as herbs, salads or spinach in the kitchen (one of my favorites are also strawberries), flowers in the living room, and on the balcony, a small variety of taller plants, like cherry tomatoes, beans, peppers and radishes.

THE HANGING METHOD may also be efficient with other small containers, such as, clay pots, baskets, buckets, bottle tops, or anything else that may come to mind. In these cases, we have to grow our plants in the traditional way, but nothing should discourage our inventive mind. With proper fixing to the ceiling, there should be no problem at all, except for the irrigation system. It may add a bit of extra work.

HAVING A BACKYARD OFFERS us unlimited options for growing your plants. It goes from tower structures to tired gardens and any original idea that you come up with. All the methods described above are suitable.

Everything from vegetables, flowers, annual and perennials can be grown at home. You can use smaller varieties of traditional big plants and you could use slings, ties, trellises, and other supports (bought or self-made) in order to achieve your unconventional garden.

DIY Vertical Garden Dripping Irrigation System

FOR THE WATERING SYSTEM, the most efficient one is the drip watering one. They are easy to use, since they are attached to the sprinkler system. You can also put a timer on them. There are all types of irrigation tubing, hose pressure reducers, caps, drip soaker hoses, and other gadgets available in specialized stores, but there are also innovative ways to make it on your own. For example, in towering pots, all you need is holes on the bottom of your containers. And even if you are a beginner in gardening and sometimes simply forget to water your plants, don’t worry too much. Plants always find their way to reach the things that they need.

> The drip watering system is very easy to install. Women can do it easily, but I always rely on my husband to do it. They have long-term endurance.

He got inspired by a site that explains very well how to do it. For the cedar herb garden, of for connected boxes vertical garden, or drawers garden or that made of moveable planters it’s the perfect system.

I will try to explain it in the best way possible. First, we have to purchase the supplies. These include:

- 1/2” drip irrigation tubing
- 1/2” cap
- hose pressure reducer
- 3/4” hose
- 1/2”drip lock adapter
- hose back flow preventer
- 1/2” compression elbow
- 1/4” drip soaker hose
- 1/4” end plug
- 1/4” barb coupling
- 1/4” hole punch.

Proceed by sliding the tubing down the back of your support. Lay down your support and pull the tubing out the bottom, cut out a notch in the bottom, and press tight the elbow, until it’s flush with the bottom of your support. On the other end of the elbow, you must attach another piece of tubing, then press on the hose adapter. Screw on the pressure reducer and the back-flow preventer.

Cut the top of the 1/2” tubing and attach the cap to it. Then start poking a hole in the front of the tubing, cut a piece of soaker hose befitting your shelf and press a barb coupling in one end of the hose and a plug into the other. Then press the other end of the barb coupling into the hole that you already poked on your tubing.

The next thing to do is plant your vegetables, fruits, or herbs, and start watering them by simply attaching the hose to the end and turn it on.

Choosing the right location

If you consider taking this journey, the first thing to deal with is the location. It all depends on sunlight. It's a well-known fact that plants need light in order to grow, make flowers and crops.

Becoming an urban gardener is not easy. So, you must think if it's worth investing your time and money in this system. I will give you some reasons for doing it:

- You will maximize your space in order to get the best results, creating a system more powerful than an average horizontal garden

- You will bring beauty into your life by using colorful arches or pergolas or other hanging supports needed for your vertical growing plants that may be full of color themselves (a large variety of vegetables, fruits, or flowers) in order to create a beautiful private corner of your own, embellishing your home

- You will provide a natural protection system for your home, considering that a plant wall will take in water from the rain instead of letting your walls getting the worst of it. In addition, they provide a natural protection from direct UV rays

- You will get more privacy by using natural fences that are both productive and beautiful, due to the fact that plants will provide you shade and noise reduction effect along with natural crops

- You create your own home insulating system by using the energy of plants

- You create a powerful self-help tool in making the best of growing organic foods using your imagination for recycling any kind of materials that you would normally throw away. Therefore, you have an active role in saving our environment while saving money

- You improve the air quality, as plants are natural resources for oxygen

- You have less work to do and certainly less weeds and pests to manage

It is also a method of getting fresh food in the easiest and most ecological way. It is a system that will provide benefits for our lives, for our

children, and for our planet.

If you live in an apartment, you have little choice. If your balcony is located on the east side or south, you are the most fortunate, as sunlight will shower your plants all day long. If your balcony is located in the north side or west side, you have few options for your plants to grow. In this case, it might be better for you to consider a succulent garden or to try your best to find the most sunlit spot to try to grow vegetables and fruits. The best thing to do is choose the spot with most sunlight available, so you must use your imagination to free up spaces and organize your plants in the most efficient way.

AN INNOVATIVE SOLUTION for small apartments may be the special hanging containers that will allow you grow your plants inside your kitchen, for example. These hanging containers allow plants to make the most of the light and the heath inside your home, and they certainly may be considered an original way of decorating.

If you live in the suburbs and have the possibility of a little space in your backyard, then you must choose the most sunlit spot. The only thing to avoid is not planting your vertical garden near trees or living fences, as they will absorb all the water and nutrient resources from the soil around them.

It is always for the best that our vertical garden is east or south oriented. We should embrace vertical gardening, as it gives us the possibility to grow more food in less space, hence saving you money and time.

Along with choosing a sunlit spot, we must also consider the fact that our garden needs watering, so it should be located as close as possible to our water source. Another useful tip is locating your garden near a pathway

that will allow you to gain time when tending your garden by easily getting the instruments you need, or getting an easy access to your crops.

Since it’s mostly a family business, this certainly gives us the chance to spend quality time with our children. We all know how much they like getting dirty sometimes. We need to take advantage of the small places that we can use, so we must think of getting an easy start, step-by-step, without taking high risks. The first thing to do is get used to this activity first, make a plan that allows you to get accustomed with gardening, and simply enjoy the results. Surely we can’t feed a lot of families with our foods, but we can get tremendous satisfaction when we eat our first crops.

Harvesting is the most gratifying feeling, along with the joy of sharing this experience with your kids.

Preparing the soil

In enterprising vertical gardening, we need qualified advice regarding the best soil and the best fertilizer to use for each and every type of vegetable, fruit or flower that we want to grow.

The soil is mainly composed of mineral, nutrients, residues of plants and animals, water and other inorganic particles. The best soil for vegetables and fruits is loamy soil, a mixture of clay, sand, silt and additional organic matter. What makes it a very fertile soil is actually the combination of all these elements that disengage the negative properties of each one of them. Clay soil or sandy soil are not appropriate for growing vegetables due to their low level of nutrient properties and their inability to retain water, which makes it hard for the roots of our plants to absorb the needed water. But combined they create a very befitting soil for our needs.

First of all, we must prepare our growing spot. An important aspect in preparing the soil is cleaning the space that we will use for growing our plants.

If you have only the balcony at your disposal, there’s not much preparing to do, since you will use special containers and you will buy the needed soil and fertilizers in specialized stores. These are things that don’t need additional work, considering the fact that they already contain all useful nutrient properties and do not require weed treatment or any other intervention, except for our use of imagination in creating the ultimate relaxing and useful own corner of bliss.

In our backyard, we may find a bit more work to do before starting growing our vegetables and fruits. The first thing to do is turn the soil. It is an indispensable action for maintaining and enriching the nutritional reserves of the soil. Traditional gardeners recommend deep digging, while ecologists certainly go for the superficial one. Their main argument for supporting their theory is that the superficial digging does not alter the life of the microorganisms and bacteria that live underground and have an

essential role in keeping a biodynamic balance of the soil and respects the natural resources of it.

Cleaning the soil means getting rid of any small or large stone that we find, since they have a bad influence on the growing process of the plants, especially for those with pivoting roots. Discarding any weed root that we find is also highly recommended, especially when it comes to couch grass, which is our number one enemy in terms of growing vegetables, fruits and flowers.

Loosening the soil is an important stage of our project, since it allows our plants to make the best of the nutrient properties of the piece of land required for our vertical garden. It’s all about grinding our soil. Doing this, we make it easier for our plants to obtain the best nutrient properties and the needed amount of water from the soil, hence achieving better growing results.

If you live in an apartment, the first thing to do is buy the best soil with the highest amount of nutrient properties. The more varied properties it has, the largest variety of plants we can grow in it. You should only know what plant you are interested in growing so that your provider can help you choose what is best for your needs.

You can find special soil for each plant, or a universal one. In the store, you can find all sorts of soils intended for vegetables, for fruits, for flowers, and for any other plant that you may want to grow. You can find natural or industrial types of fertilizers and you can also make your own compost. More on that later!

If you have a small garden, then you must prepare the soil first. An important matter is the type of soil that you have and what you must do in order to optimize it. There are available tests for finding out the nutrient properties and the pH level of the soil. The alkaline soils, or the slightly acidic soils, are the best ones for agriculture. Once you find out what pH level your soil has, you know what you have to do in order to make it fit. For example, if the pH level of your soil is higher than 7,0 you deal with a calcareous soil, and if it’s lower than 6,0, then you’ll deal with an acidic soil. In the first case, please take into account that you should never add calcium oxide to it.

A simple and easy method of finding out the pH level of your soil is conducting a little experiment on your own, like in the old days of elementary school during chemistry or physics class. First of all, you must

take samples of the soil, digging at approximately 11 or 23 inches deep. Mix all the samples and add some drops of vinegar. If the soil is calcareous, effervescence is spotted.

Another important aspect of your soil is whether it is soft soil or heavy soil. Figuring this out it requires only 5 minutes. Grab a fistful of your soil and moisten it with water. Start kneading it, and if it shatters, then you have soft soil, which rapidly absorbs water. If, in turn, your result is a hard ball, then you have heavy soil.

Another easy way of finding out what type of soil you have is by looking at your field after a few rainy days. If you see puddles of water on top, your soil is a heavy one, because it doesn't allow water to easily find its way through.

When dealing with soft soils, you must loosen it. It is advisable to turn your soil in the spring, because during the winter the soil is protected by a rich layer of leaves and other organic matters or compost, while consolidating with natural fertilizers, like manure.

For the heavy soils, turning should be done in autumn, followed by spreading manure or compost on top.

To obtain a nutrient and rich soil, you must consider some additional elements that will make your soil happy. These supplements are not fertilizers, they are a simple method of creating the perfect soil with the needed balance of properties.

They are:

Calcium oxide. This is used on clay soils to make them easier to labor. At the same time, it decreases the acidity of the soil, which makes it harder for weeds to settle. It is beneficial for any type of soil, except for the calcareous one, as I already mentioned above.

Moss. This is a leafy-stemmed, flowerless plant that we find in tufts, mats, or moist grounds. It doesn't have nutrient properties, but it is used for retaining water since it behaves like a sponge and is better used for the easy soils that cannot retain water.

Manure. This is the only soil supplement that may also be considered a fertilizer. There are two types of manure: cold and hot. The cold one comes from cows, chickens, or rabbits and the hot ones from sheep and horse manure. The hot manure is beneficial for clay soils and the cold for calcareous soils. The important thing is not to use fresh manure, because it

burns the roots of plants. It must be put aside in the field for at least three months. You may use it as a supplement once every three years.

For small gardens or balconies, it’s always better to use organic manure granules. In this way, we get rid of the “stinky” issue of using natural fertilizers.

Some shops will provide you with natural fertilizers that contain the right amount of nutrient elements that our plants need. Even if there is a big difference between the needs of each plant; all of them need nitrogen (N), phosphorus (P), and potassium (K). These are the most significant elements that our fertilizer should contain.

Nitrogen (N)

Nitrogen’s main action concerns the aerial part of the plants, meaning the stems and leaves. That’s why it is a good fertilizer for all vegetables with big leaves like salad, spinach, or cabbage. In the past few years, its use as a vegetable fertilizer has increased due to the growth of the world population and the increased amount of food needed worldwide.

Lack of nitrogen causes the slow growth of the plants; excess causes frailty, makes the flowering and fruiting stop, along with causing a deficiency in fighting pests and diseases.

Phosphorus (P)

Its main action is involved in the development of roots, flowers, seeds, and fruits and in increasing the resistance of the plants against pests and diseases. It is recommended for growing tomatoes, peppers, eggplants, fruit trees and flowers.

Lack of phosphorus causes decreased flowering and longer ripening time.

Potassium (K)

This element is useful for strong stem growth, promotion of flowering and fruiting and the movement of water in plants. It favors the root growth; it gives a better taste to fruits and more color to the flowers. It is beneficial for the uptake of nutrients.

Lack of potassium causes necrosis of the leaves and deficiency in fighting pests and diseases.

These three elements are complementary, and they should be used after proper transformation done by microorganisms, therefore the importance of compost.

Other ecological fertilizers:

1. Animal-based fertilizers:

-Chicken manure. It is high in nitrogen and phosphorus. It’s for the best to spread it on top of your soil at the beginning of spring. One handful of it should be more than enough for 10 square feet. You may easily consolidate it with the soil by using a rake.

-Guano. This is bat or seabird manure, which comes in pellet form or powdered. They are also high in nitrogen. You may use it exactly like the chicken manure.

-Poultry dry blood. It is the powdered blood of slaughtered animals; it contains a high amount of nitrogen and it favors plant growing. You should spread 400 grams on a surface of 10 square feet.

-Grounded or burned animal horns. They are rich in nitrogen. 400 grams should be more than enough for 10 square feet.

-Fishbones. They are very rich in phosphorus and are a universal fertilizer. You should use them in autumn or winter, by burying them at approximately 11 inches depth. From this category, you may also choose: fish emulsion-a liquid product that mixed with water is very effective for stimulating the growth of seedlings and hydrolyzed fish powder-it is rich in nitrogen, you should mix it with water and then spray it on the plants

1. Fertilizers of vegetable origin:

- Nettle manure. It is high in nitrogen, potassium and other microorganisms. It stimulates the growth of plants and makes them more resistant to all pests and diseases.

It’s very easy to do. You must chop 1 kilo of fresh nettle and put them on a plastic can with 9 liters of water. Let it sit for two weeks. If bubbles are not showing, then the solution is ready for use. An important matter is diluting it till reaching a 20% concentration. You obtain it by mixing 2 liters of your solution with 8 liters of rainwater. Rainwater is the best possible to use, but if you don’t have it use the one available.

Spray your plants with the solution daily for one week and repeat after two weeks. It is highly recommended for potatoes, cabbage varieties, spinach, and pumpkins.

-Comfrey. It is high in nitrogen and potassium, it also contains magnesium, copper, iron, and calcium and it stimulates the

growth, the flowering and fruiting of the plants. It is a wild plant well-known for its medicinal properties, which makes it one of the best natural fertilizers.

Put 1 kilo of chopped comfrey with 10 liters of water into a plastic can and let it sit for two weeks. If you see no more bubbles then you can start diluting it till it reaches a 15% concentration. Don’t use it as it is because it may burn your plants.

Spray it on your plants every ten days. It is highly recommended for potatoes, tomatoes, green vegetables and fruits.

-The mixed nettle and comfrey solution is high on nitrogen, trace elements, potash, and iron.

Put 1 kilo of chopped comfrey and 500 grams of chopped nettle into a plastic can, along with 2 liters of water and let it sit for two weeks. Dilute the solution until it reaches a 10% concentration using rainwater (the best choice possible).

Spray it daily on your plants for one week and repeat after two weeks. It is highly recommended for potatoes, tomatoes, green vegetables and fruits.

Another method of preparing the soil for vegetable, fruit and flower growing is mulching. It means “covering” your plants in a vegetal layer of grass, straws, leaves, wood chips and other shredded plants, or simply newspapers. This is the best time-saving method that any experienced or inexperienced gardener should use for having a healthier garden, for having fewer weeds and spending less time watering and fighting pests and diseases.

There are two methods of using mulching for fighting weeds. The first one you can use when the soil has already been weeded by putting a 2- to 3-inch layer of mulch, and second when you try your best to discourage new weeds by putting on top of them a 4- to 6-inch layer of mulch.

If you have a soil filled with weed seeds and perennial roots is best to use a double-mulching technique, accompanied by plenty of watering and spreading newspaper on top. This will help your soil better fight the new weeds since the shadow will no longer allow their roots to be that strong. And in the meantime, the soil retains more water and heat that will be useful for our plants.

There are two basic types of mulch:

-organic (chopped nettle and comfrey leaves, grass, wood chips, sawdust, straws, weeds, and compost)

-inorganic (black plastic and geotextiles).

In what concerns the organic materials we should consider not to use weeds that may spread their seeds, to use only well-trimmed leaves, to avoid pest infected leaves and to the grass that has been treated with herbicides.

The importance of compost

There is a need for compost in any garden, traditional, vertical or any other different type of it. It's a natural fertilizer, hence it's the most efficient way of recycling most of our natural resources and waste products to obtain a chemical-free nutrient-rich soil. It is available in specialized stores but it's also a very easy DIY method of doing our best in keeping a green environment.

The reasons to use it are quite a few. For example:

-keeping a green environment not only for us but for the entire world and especially for our children,

-it helps us save some money, by not buying all those chemicals, which sometimes harm our soils, depriving it of its natural nutrient properties,

-it attracts the good types of bacteria that will help our plants to grow stronger,

-it has a long-lasting healthy effect on our soil, giving our plants the opportunity to a scaled intake of nutrients, all according to their needs

-it gives you a healthier life since your plants use only natural nutrients that allow them to beautifully grow while fortifying them to have the most beneficent effects and ensuring you a longer life.

The most important question is: what is compost? It's decomposed organic matter which allows us to use various waste products, such as leaves, grass, ashes from wood, discarded weeds, sawdust, food scraps(eggshells, coffee ground, peels of vegetables and fruits), animal manure and bedding materials, straws and even paper or thin cardboard.

It provides the perfect growing medium for our plants giving them the appropriate support and nutrient properties. There are four main elements needed for composting: carbon, nitrogen, oxygen, and water. With the appropriate mixture of these elements, micro-organisms can start doing their job in decomposing the organic matter. The most common types of bacteria engaged in the composting process are:

-bacteria, mainly mesophilic or thermophilic

-actinobacteria -necessary for paper waste decomposing

-fungi-molds and yeast-for breaking down wood materials

-protozoa

-rotifers -they help control the population of protozoans and bacteria

Finally, we find earthworms, with the important role of re-creating aeration and drainage tunnels in our compost.

There are many techniques for making compost. Some are industrial-scale ones, and some are household-level ones. I will focus on the last since we don't need great amounts of compost and we may get some satisfaction in doing our small action for keeping a healthy planet.

So let's start the DIY compost process, or "the stinky project" -as my kids like to call it. I will try my best to give you the right and most useful advice. Once it is ready for use compost should not have a bad smell though, so don't worry much about it.

The first thing to consider is location.

I recommend vermicomposting for small apartments. Also, in these cases, you may very well rely on all sorts of compost products that you may easily find in every specialized store. It is also a way of saving us some time and a bit of extra work.

In our backyard, we must choose the perfect spot. It should be a remote place since we don't use it daily and since it certainly takes a lot of time. We should consider three essential elements though: suitable water draining and humidity level, a good airing and of course the right choice of waste materials to use.

Keep in mind that the waste to use should be equally distributed. We talk about:

-dry materials, like dry grass, ashes from wood, sawdust, some cardboard waste, straws, and dry leaves

-green or moist materials like food scraps, freshly cut grass, peels of fruits and vegetables, eggshells and fresh manure.

The waste materials to avoid are meat, fish, bones and other fat products, dairy products, citrus peels, ashes from coals, weed roots and seeds, walnuts, leaves, and rhubarb.

Once we have the perfect mixture, we should place it directly on the ground. It's a golden rule that not anyone is likely to share with you. To create compost you must allow warms to get into your waste bedding. So when you find the perfect location you will only need to secure the place,

by using small brick or timber walls, or a big barrel or simply a round or square railing. If you have none of these materials available, in stores you may find special compost containers -silos placed on wooden pallets.

The ultimate cost-free method is just letting the waste layer on the ground since nature has always the best answer and best remedy for just about everything. Where I live now is the most used method. All farmers have great trust in nature, rain and all other natural elements that cooperate for better growing plants. Sometimes they merely trust in God's will. I don't know much about that, but I surely have faith in mother nature.

How to make the best compost?

1. The vermicompost method

It's the easiest and the cheapest method of obtaining compost, by using various species of worms to create a mixture of decomposed food waste, vegetable, and bedding materials.

It is the most efficient method of obtaining compost for urban gardeners and apartment dwellers, since you may place your worm bin under the sink.

This type of compost contains nitrogen, potassium, and phosphorus (the three most essential nutrients for plant growth), micronutrients and minerals that make it the best organic fertilizer and soil conditioner.

The things we need are special containers that we find in specialized stores or wooden box (better to avoid metal containers), bedding material(newspapers, peat, and cardboard), discarded vegetables, fruits or other food waste and, of course, earthworms(red wigglers and redworms are the best choices).

The worms are easy to find online or in specialized stores. Your local supplier should give the best advice. Keep in mind that it takes about a pound of worms to process a half-pound of food a day.

Prepare the bedding, add water to dampen it and cover the bin. If you're in a moist environment you may go along, but if you live in a dry environment you must add water that will allow you keeping your worms alive. It's always for the best if you may place the container in a warm, not that sunny spot, but as I already mentioned before, even under the sink, or in a cabinet or basement may work well.

Add worms into your container and let them adjust to the new environment for two or three days, then you may proceed with feeding your

worms with fruit and vegetable scraps, eggshells, tea leaves, bread, pasta grains, and moist grass. You must avoid salty or spicy foods, meat, dairy products, and oils.

Stir the mixture after every three hours if you have the time.

Vermicompost is ready when it contains no more scraps of food or bedding. The easiest way of harvesting it is heaping the compost into a pile and waiting for the worms to get on the lower level, then keep on brushing it until your worms create a small ball.

1. Compost heap method

The only difference between the first method and this one is worms. Now you don't need them. And it certainly is a much longer process.

First, we need a sunny spot. The bedding should be made of wood materials, like branches, which will favor the airing and water draining. We will place our waste, always keeping the balance between the dry and the green materials, therefore we put an 8 inches layer of green material first, then an 8 inches layer of dry material on top of it and so on. If you live by the sea, you may also add some 4 inches layers of algae (but is not a must-do thing).

On your heap of compost (at least 40 inches high) you should add at least 10 liters of water, along with nettle solution. For maintaining the heat we should cover our heap with leaves, straws or dry grass.

The nettle solution helps decomposing but as I mentioned before it doesn't have the greatest smell. We must occasionally stir our heap, to allow all our waste material to reach decomposing. The microorganisms that our waste materials contain do their job, by increasing the temperature, hence sterilizing the compost. Then the temperature decreases. This stage takes at least two months.

The second stage takes from two to six months. Now we must stir our compost once in two months, always keeping it well moist, but not soaked.

If you want less work to do you may let nature take its course. Keep in mind that it will take a bit longer, but the result is always the same.

1. Trench Compost method

It is a method to compost kitchen and garden waste, that enriches your soil by using the most invisible and sanitary techniques.

It requires almost no work at all and the less time possible. You only have to dig a trench or any other shape hole, approximately 12 inches deep in your backyard. Add four to six inches of waste material, including kitchen scraps, spent garden plants, weeds, small prunings and bury all of it with soil. There is no following step since you don’t have to worry about maintaining airing or moisture level and you don’t have to stir it.

The reasons to use this method are:

-the plants get healthier because of the very nutrient properties of this compost and they also grow more resistant due to their “struggle” to reach the nutrient elements buried deep beneath them

-it is an invisible method since is buried deep

-it does not produce odors, efficiently removing the bad smell of any kitchen waste

-it is the perfect method of avoiding the rules of some municipalities in what concerns home composting

Seeds and seedlings

When we decided to start vertical gardening our plants, we had in mind the limited space at our disposal. So, we must also choose the best seeds or seedlings possible. We can buy them in any specialized store, already treated for pests and diseases, but absolutely no one can keep us from using our own.

In the beginning, certain mistakes can be made (I certainly made a lot of them until I finally got to understand and learn the right ways to obtain the best results), but in time we will achieve our own best selection of seeds and seedlings.

It’s not that hard to do. The most important aspect is choosing the ripest, biggest and good-looking fruits from your plants. In some cases, like beans and green peas, all it takes is letting them dry in a well-aired space and then simply shake them to make them fall and obtain your seeds.

For plants like tomatoes or pumpkins, you may easily take off the seeds once the fruit is ripe. You may slice the tomatoes, place them in a bowl, cover with water and let it sit for three or four days. Proceed by taking the seeds off the water, rinse them and spread on cardboard so that they can dry.

For potatoes, all you must do is choosing some of the most well-shaped, spotless and medium-sized tubercles after you harvest your ripe potatoes. You must keep it in a cool place, to prevent early sprouting.

For peppers, you may proceed with the first two ripe and good-looking fruit. Take off the seeds and let them dry on cardboard for at least 24 hours.

Pumpkins seeds are also easy to get. Cut your fruit in two, take off the seeds, rinse them with water then spread on cardboard to let them dry.

The onions and leek seeds will not be ready for the first year. It’s recommended to use only the second harvesting seeds for better results. Let one or two plants to flower and collect them when they start to get dry. Hang the stems in well-aired space and simply shake them on paper.

The same process is needed for carrots seeds. And is for the best to use the second harvesting products to obtain better crops.

In what concerns parsley we just have to let one or two plants grow and flower, well cover it with straws during the cold season and the next year collect the seeds by simply shaking the stems on top of cloth pieces.

For garlic, you must use the outer cloves for the next year. In the meantime let a plant flower and when it begins to dry collect the seeds by shaking them on top of a piece of paper. These seeds will allow you to grow all the cloves you need for the second year.

Keep in mind to always use the first fruits that your plants offer since they have the best nutrient properties that will allow you to get better crops next time.

For most plants, we shall use seeds, but there are a few that need seedlings to grow and produce more crops. The last category includes tomatoes, peppers, eggplants, cabbage, cucumbers and certain varieties of pumpkins.

So, we have two methods to consider: -direct seeding

-indirect seeding (transplanting)

Direct seeding

It is the easiest method and it has the following stages: preparing the soil, preparing the seeds and seeding. We have all year long to grow vegetables, especially if you do it in small vertical gardens. During the cold season, we'll plant things that are resistant to cold weather, like spinach, parsley, and carrots. At the beginning of spring, we can plant onions, green peas, radishes and other vegetables that enjoy cool weather. In late spring and summer, we have many more choices, we can go from beans, cucumbers, melons to tomatoes, potatoes and any other plant that you may want to try.

The first thing to do after preparing our soil is choosing and preparing our seeds. When it comes to those, we buy in specialized stores there's not much to do, but when it comes to our seeds, we must choose the best possible. So, we must consider using the most healthy, good looking seeds (we must consider the shape, the color, and the consistency).

Preparing them means applying certain chemical treatments that can be done in two ways:

-the moist treatment -place your seeds in small gauze bags and introduce them in the chemical disinfectant solution for a few minutes, rinse and spread on paper to dry

-the dry treatment-spread dry disinfectant powder on your seeds and mix them to cover.

For some seeds, it’s best to use moistening. It means keeping them in water, at 64 Fahrenheit degrees, until they swell. It is done when we must fill blank places in our garden or, in the cases of some, hard seeds like those of beans. We must change the water from time to time and stir the seeds occasionally. The time varies from one plant to another, for example, radishes and salad seeds need only two hours, beans and green peas need twelve hours, cucumber 24 and spinach, onions and celery need 72 hours. These moistened seeds must be planted on wet soil.

Another important stage of preparing the seeds is growth stimulation treatment. It can be done by using physical and chemical agents. A physical element available for all of us is heat. The chemical method can be done by using vitamins or plant extracts.

Direct seeding is influenced by the necessities of each plant in what space is concerned. There are small plants, such as radishes, carrots, spinach, onion or salad and big plants like cabbage, peppers, eggplants, and pumpkins. Another space issue may be the support that some plants like tomatoes and cucumber need, so make sure to place as close to the ground as possible. It is also influenced by the climate (the heat factor) and by the type of soil.

The heat factor is not that big obstacle when we live in apartments, because even if the outside is cold, in our homes we use heat and that is helpful for the plants too. Or on the balcony, for example, there are always solutions to cover our plants. In gardening stores, we can find all sorts of greenhouse structures and all sorts of materials that will help us keep our plants warm.

For small backyards, the only inconvenience in keeping plants warm could be the bigger sizes of our containers or structures. It’s easy to cover them all, though.

The direct seeding in our urban garden doesn’t take that much work since we use small containers that are well organized, so it becomes simple to place our seeds in little nests. We must be careful not to dig very deep so that our plants don’t have to struggle too much to arise.

The types of direct seeding are:

1. Dispersal -you may use it for flowers and a small variety of vegetables. It is not very efficient since they end up growing chaotically and

eats a lot of your limited space.

2. Row seeding -it's a very efficient method to use for growing all varieties of salad, spinach, carrots, radishes, and beet. We may use this method in our backyard also, always considering the space, if our structures are big enough you may have two rows of the same plant. The necessary space for each row is the only limit. To have straight rows you may easily use a string fixed from one end of your container to the other.

The only mistake we can make, especially if we let our children do the seeding, is spreading too much of them. That's why I will tell you what you can do to fix that.

So, for plants like radishes, beets, and carrots we must consider the fact that too many seeds are not OK. Therefore, after our plants begin to grow (from two weeks on) and we see that their roots are strong enough, we will have to snatch some out for the simple reason that we are after their roots, hence they need more space into the ground to give us good crops. In what concerns lettuce, spinach and other big leaf greens the snatching also comes handy since they need a bit of space around them, so we must give them that to grow properly. Instead, for arugula and lamb's lettuce, for example, the more the merrier.

3. Nest seeding -is the most efficient method for the plants that need more nutrient space. We talk about melons, cucumbers, squash or fruits. So we start making holes, their depth depends on the size of our seeds. For example, small seeds like that of carrots and radishes need 1- inch depth, medium seeds like those of tomatoes, spinach and beet need 1, 2-inches and big seeds like those of beans need 1, 6-inches.

After putting our seeds into the ground the most important thing is watering them daily, especially in the first two weeks. Of course, if it rains and you have your vertical garden outdoor there's no need for watering. Each plant has its own needs in what water is concerned but I will tell you all that when I will begin talking about each one of those plants that you can grow.

Indirect seeding

We have seen that we can obtain our own seeds, so, why not obtaining our seedlings too?

Transplanting is a very efficient method of growing vegetables. It allows us to obtain better results. Using this method has its advantages, such as:

-obtaining crops in any period of the year

-decreasing the time that our soil is used for certain plants, which allows us to have consecutive harvests

- increasing the production of plants that are heat exigent

-assuring only the healthiest and strongest plants for our limited space.

It’s not hard at all but you will have to respect certain rules: the right amount of light, the suitable heat, a high level of humidity and the best soil possible. These will help you obtain very resistant seedlings that will certainly give you a lot of satisfaction when it comes to harvesting the best natural crops ever.

For a beginner, it may sound a bit difficult, but trust me, it isn’t. Think that my first seedlings came out from an old plastic bathtub that I had in the attic. I tried my best to put the seeds into a rich, nutrient soil, I kept watering them, kept them on my window frame, above the radiator (to get the light and heat that they needed) and most certainly watched as if they were my babies. What I kept saying to myself was: trying won’t hurt.

Later, after a month, I snatched the weaker plants to let the more resistant ones grow in more space possible. Then I transplanted the strongest plants in plastic cups so that each plant got stronger roots. And I had pretty good results with my first crops, I’m not just bragging about it. The next year got better though, and I kept trying and trying until I almost achieved the best, most satisfying results.

Fortunately, nowadays we may easily find special trays with singular pots that are very easy to manage. They are made of plastic, fiberglass or peat. The last ones are the easiest to use since they are biodegradable, and you may very well put it on the ground exactly as it is. Before using them, please clean them well, to avoid pest development.

If you want to get original, think of any waste container that you may use, large and deep enough to get the needed space for your plants. In your backyard, you may choose any DIY method of building wooden structures

for growing your seedlings. Use your imagination for any shape and color, being careful though to its location.

The most important issues are always the soil, light, heat, and water.

Light is a very vital aspect. Plants need it to live. So, try to find the most sunlit place possible, if you don’t have the possibility of getting your hands on recent lighting systems. There are two or four fluorescent tubes settings that should be placed over our seedling containers and will provide the needed light if we use it for 12 to 14 hours a day.

The soil that we use should be the most nutrient and rich in minerals possible. We use this method to get the best seedlings, so let’s not waste time, space and money. There are mixtures available in any gardening store. Your provider will surely help you choose the best soil you need.

If you want to do it yourself there are few aspects to consider. Know that what you need is soft soil that allows water retaining and seeds growth. You should add a bit of natural fertilizers or compost to it (those that were mentioned in the previous chapter) so that your plants obtain all the nutrients they need.

The right temperature for seedlings should be maintained at a range of 70 to 75 Fahrenheit degrees. A lower temperature will delay the growth, higher temperature will only give weak and thin seedlings. Anyway, after your plants begin to grow you should decrease the temperature down to 64 Fahrenheit degrees during the day and 60 at night.

Watering is important but if it’s done excessively it becomes an issue. Keep in mind that plants need moist conditions, so for the bought containers, you should use special trays, placed underneath, that you must refill with water from time to time. In this way, your plants will suck as much water as they need and only when they need it. For backyard or DIY containers, you must use common sense. Too much or too little is not good, find the right balance by simply observing how the soil looks like and how your plants behave.

Weeds may appear only if we used soil from our garden that was not previously treated. In this case, we must snatch the weeds if they are too many. We should water the support one day ahead so that their roots are easier to pull out off the ground.

The next step should be transplantation on our special containers for vertical gardens. But in some cases, it’s for the best to use temporary transplantation. It means choosing some of the best seedlings that appeared

after two weeks and already have at least two leaves and simply transplant them in larger pots. This will allow them to get even stronger. First, you must water the container, then gently pull out the plants and relocate them in the prepared pot. There are several types of pots that are suitable for this method.

And these are:

-burnt earth pots-the classic pots that were used decades ago, they are not that affordable and efficient anymore

-plastic pots-they have a peculiar pyramid shape and are more economical and easier to use

-Jiffy-pots-they are made of a special mixture of peat and cellulose, they come in various sizes and are easy to use, since you may very well leave in into the ground along with your plants

-paper pots-they also come handy because are made from biodegradable material and better allows the roots of our plants to easily find nutrients.

Temporary transplantation is the best way to grow resistant plants. It is worldwide used, especially for large gardens, but we must use it in our urban garden to achieve the best results with limited time and space.

Finally is the outdoor transplantation. Consider that the passage of our plants from inside to outside should be as lean as possible.

If you live in apartments there’s little temperature difference, except for when you will use your balcony to grow your plants.

Make sure to keep a constant moisture condition, and gradually expose your plants to lower temperatures.

One day at a time. It only takes a bit of patience, not that much work. It may take from a week to ten days. It must be done in not that sunny days or even better, rainy days.

You must carefully pull out the plants from their containers, so no damage occurs. If you don’t have a dibble at your disposal, please get dirty by using your hands. Better if you crumble the soil around the spot you chose for your plants. In this way, your seedlings have better chances of easy development.

Herb planting

Herb vertical gardening is a one-of-a-kind category. It takes both ways of seeding. Some varieties need direct seeding and indirect seeding to get the best results, some go along with your best attempts to teach them who the boss is and some simply follow their course.

Basil needs the two methods. It must be planted inside, in a small container and only a month later transplanting it outdoor. It is a fragile plant that needs proper care and heat before living in a natural environment.

Other herbs like parsley, coriander or dill are a bit more manageable. The only things that they need are moistened soil and sunlight.

On the other side, herbs like mint, thyme, sage, and anise do what they want. They are well-known as wild plants. In these cases, the best to do is preventing their overwhelming spreading in our garden, by maintaining a distance of at least 10 inches between one root and another.

How to control pests in your garden

Pests and diseases are every farmer’s nightmare. It depends on your environment if you will have to deal with a lot of them, or luckily, with less possible. But let’s admit that there are good and bad pests.

The first thing to do when you are a beginner is well observing their effect on your plants. Bad pests come in hordes, take control over your plants and feed on them, blowing away all your best projects.

The good pests are:

-Spiders

-Earthworms

Honeybees

-Praying mantis

-Ladybugs

-Ground beetles.

They are a natural way of fighting off some of the bad pests. Along with these, we may also use the natural help of some plants that that can help us keep our garden healthy. These are:

-Marigolds

-Parsley

Broccoli

Capsicum

-Oregano.

The most common pests are:

1. The mole

Let’s face it that the mole can be sometimes cute. When you think better of it, you will realize that they eat earthworms, that are useful for our soil, but they also eat a lot of parasites that mess up with our soil. Furthermore, they dig galleries that turn out to be quite helpful for the drainage of the water. The only bad effect they have on our garden is the unaesthetic heaps

they make on the grass or in the middle of the alley. We must admit it’s not that bad a pest.

1. Field Mice

It is absolutely a bad pest since it devours all our plants. The best natural remedy is the cat.

1. Hares

It attacks mostly trees, but leafy vegetables or beet and carrots are also its favorites. You can use chili peppers to keep them away or animal manure and naphthalene.

1. Birds

They can eat some harmful insects, but they also eat our small leaves. Let’s just say that they are 50% useful and 50% harmful. It’s not nice at all to find all our plants destroyed, but it’s nice to get rid of weeds, small snails or small rats.

1. Aphids

They attack any kind of plant they find in their way and are quite hard to get rid of. Their natural remedies are ladybugs, some spiders and small birds. Another remedy is using a fern solution. It is easily made by using 1 kilo of fern leaves in 10 liters of water. Let it sit for a week then dilute at a 10% rate.

You can also try planting parsley around the plants that are most sensitive to aphids or soaked tobacco.

1. May bug

It affects the roots of our plants. The way to fight them off is by using potato baits to collect as many worms as possible.

1. Potato bug

It’s harmful to potatoes, tomatoes, and eggplants. The most natural remedy is placing horseradish near the affected plants. Collecting them is also easy to do. The next step is getting rid of them.

1. Earwigs

They are both bad and good pests. Bad because they feed themselves on our seeds, plants, and fruits. Good because they also eat small insects, snails, and organic waste. You may use peanut butter traps to collect them or simply place a bucket of water with soap in your garden. They will be attracted and eventually drown in it.

1. Ants

They can be quite a big problem, especially when they team up with the aphids. Their nasty habit of “raising” aphids for their secretions, rends them bad pests. The natural way to get rid of them is by using strips of sticky paper, place them at 40 inches above the ground level. You should repeat this method twice. Another efficient method is using plants with strong smells. Ants don’t like garlic, mint, oregano or walnuts. Lemon juice also comes handy for sending ants away.

1. Cabbage moth

It is a bad pest, making big holes in our cabbage, salads and other green leafy vegetables. Natural remedies are ashes, salt, and garlic. Spread them early in the morning on damp plants.

1. Tomato hornworms

It affects tomatoes, peppers, potatoes, and eggplants. They eat the leaves and the fruits. The way to get rid of them is by using light traps or simply planting parsley or carnations close to your vegetables.

1. Limax

It affects cabbage, green salad, potatoes, and small fruits. You can use ashes or small heaps of sand near your plants. An interesting tip is using

small cans with beer in them. They are attracted by the smell and will eventually drown. Change the traps every day.

Some of these pests we may never encounter in our urban garden, but never say never. For all the insects that may show up, there are solutions to buy in specialized stores. And there is always the DIY method. Use plants like eucalyptus, pepper, chili peppers, basil, cilantro, thyme, garlic, nettle or garlic. Always use healthy plants.

Make infusions of all these plants, using rainwater if possible. Please keep in mind to dilute the solution once it’s ready. Spray it on your vegetables and fruits, from time to time. It is for the best to let pass two or three days between one spraying and the other. It’s important to stop the use of these solutions when you know that harvesting should start soon. Stop at least 5 days ahead.

Another important aspect of keeping pests away from your plants is keeping your garden clean. The affected plants should be thrown away as soon as possible or burned. Never use them for compost.

How to control diseases in your garden

Diseases may vary from one plant to another. But the most common are:

1. Mildew

It is caused by a fungus and mostly affects potatoes, grapes, tobacco and cucurbits vegetables. It consumes the leaves of our plants causing them to dry and fall. It is active from spring to fall.

1. Blight

It is also caused by a fungus. It affects almost every vegetable and fruit that comes its way. We shall see small white spots on the leaves and brown spots on the back of the leaves. They cause dryness and fall of the leaves, making the plant to cease growing. In drought conditions, it disappears.

1. Mold

It appears in humid conditions. It affects all kinds of vegetables and fruits. We see great dark spots that will give us the impression of rotten fruits.

1. White rust

It is also caused by a fungus that sucks the sap from our plants, causing their death. You will see dark pustules on the back of the leaves.

The natural remedies are:

Horsetail.

1. Infusion. Take one kilo of horsetail, cop them and put them in a bucket with 10 liters of water. Let them sit for 24 hours, then boil them for

half an hour. Strain it when it’s cold. To be used for mildew and blight. Spray it once a week.

2. Decoction. Put 500 grams of horsetail in 5 liters of water. Let it sit for three hours then boil them for half an hour. Strain when it gets cold. Don’t forget to dilute it, up to 30% concentration. Spray it once a week for fighting the blight in cucumbers, squash, and blueberries.

Horseradish.

Infusion. Put 150 grams of chopped horseradish in 5 liters of boiling water. Strain when it’s cold and spray it directly on the plants. It is used against mildew and blight.

Chive.

Infusion. Put 150 grams of chopped chives in 5 liters of boiling water and strain when it gets cold. Spray it directly on your plants. It is also used for fighting mildew and blight.

Garlic.

Infusion. Put 150 grams of chopped garlic in 5 liters of boiling water and strain when it’s cold. Spray it directly on your plants, to fight off blight, mold and white rust. It is ideal for beans, tomatoes, potatoes and green salads.

Never forget to keep your garden clean, to get rid of your ill plants and repeat these treatments if it should rain. Spraying once a week should be more than enough, but if your disease turns out to be quite resistant, please follow the advice of your local provider. We may not be able to keep our garden ecological, but, at least, we will have big crops.

Vegetables for vertical gardening

So, we finally get to my favorite part. Vegetables. Don’t get me wrong, I enjoy my share of grilled pork ribs, but vegetables found their way straight to my heart.

Vegetables are divided into more categories, depending on their fruits, their shape, and their needs.

1. Solanaceous vegetables

Tomatoes

Tomatoes are probably the most searched vegetables in the world and they certainly are my favorites. They have a very nutrient value because they contain carbohydrates, mineral salts (K, P, Fe), vitamins (B1, B2, B6, C, K) and they have excellent taste. From tomatoes, we may obtain products for the entire year, since we can use them fresh during the entire period of their harvesting or in can foods, due to the industrial processing.

They are part of the Solanaceae family, an important genus of the flowering annual plant family, specifically named Solanum Lycopersicum.

Remember!!! The leaves are toxic!!!

Their origin is South America and ever since they were introduced in Europe halfway through the 16th century they continued spreading all over the world and became the most important component of vegetable production. With an intense work in diversification, we managed to obtain more than a hundred types with significant production value.

They need sun exposure; they need a soil rich in humus and plenty of water. There are plenty of types that we may vertically grow because they are tall and heavy plants that need trellising anyway, but the easiest varieties to grow in small places are dwarf bush ones, like Cherry, Roma and grape tomatoes.

Yet, no one stops us from trying with bigger varieties like Beef Steak, my favorite. With the proper support (a steady one) and in due time

trellising you may obtain your big fruits in your “small” urban garden, trust me!

The things to consider when growing tomatoes are:

Temperature. Tomatoes are plants that grow better in medium-high temperature conditions.

Light. The intensity and abundance of sunlight create favorable influences for all varieties of tomatoes.

Soil. They need soft soil, rich in humus and with a 50% rate of humidity.

Space. Tomatoes are tall plants, they can reach up to 98-99 inches, large stems (at least 11 inches of void space needed all around), but they have small roots. So, we need to place them on the closest to the ground level, in medium containers, if we plant them on the balcony or stuck to the wall. In the backyard, we have more choices.

I mentioned before that the best way of planting tomatoes is the indirect one, hence using seedlings. It gives us a good, strong plant to start with and makes save a lot of time. Once we have the spot settled, we can proceed to plant. Prepare the soil ahead by turning it to be soft and enrich it with natural fertilizers (the nettle solution is always the best) and water it.

Carefully pull out the seedling from its container and start crumbling the soil around the root, to allow it the freedom to find its course into the new spot. The hole should not be deeper than 3 inches. Cover it all around with the soil and add a bit of fertilizer then water. Don’t forget to place a stake (better if made from plastic or wood, they are far more resistant than the natural bamboo ones) near your plant and secure it with wire to your support. The stake should go deep into the ground since it has a great role in sustaining our plant for a couple of months.

Cut the two leaves that are closest to the ground and fix the plant to the stake (where the next two leaves are attached to the stem) by using strings, to give your plant the right direction to follow.

Tending tomatoes it’s not hard. Once a week you should secure them again to your trellis, if necessary and cut the suckers that we find attached to the stem, above the leaves. We don’t need them, they are no use to use since they don’t flower or make fruits after they grow, they simply “eat”. We should also cut some leaf tips and those leaves that cover the fruits, to obtain more sunlight possible for the fruits and more nutrient elements from the soil into the productive parts of our plant. Another important thing to do

is cutting off the tips of our plants, but that, only after two months of production (which should be quite enough for any plant) or when our space is becoming an issue. This helps the last formed fruits develop as well and reach maturity in due time.

As I already mentioned watering and adding natural fertilizers in due time is also necessary.

Weeds are not that hard to deal with when we practice urban gardening. Since we use our own seeds, our own soil, small places that are easy to take care of day by day or even bought soil that is usually already treated for such events.

The most common pests and diseases of tomatoes are quite a few, but they are easy to control or prevent. We may have to deal with: Tomato Moth (irregular holes in the leaves), Whitefly (curling leaves with sticky black patches), Leafmould (small round leaves with yellow spots), Grey Mold (patches of grey fur), Verticillium Wilt (wilting yellow leaves, eventually the whole plant wilting), Potato Blight (brown blotches on the fruit, leaves, and stem), Blossom End Root (the fruit has sunken dark patch at the blossom end) and others or we may not have to deal with any of them. The important things are: rotating the crops each year, using new soil every year, not overcrowding your garden, keeping your gardening tools clean, removing any unhealthy leaves as soon as you spot them (NEVER use those for compost) and try to avoid watering the foliage of your plants.

If these easy measures don’t suffice you may get in touch with your local provider to better help you choose the right chemical product for your problem.

Harvesting is the easiest and pleasurable stage of growing tomatoes. It starts with the first ripe fruit. Keep in mind to put the seeds aside if you want to try the DIY seedling method. And it goes on and on until the last fruits are also ripe and good for harvesting. All summer long in theory. In practice could last all year long, once we achieved our own circle of seedlings and warm spots all in due time to grow the best tomatoes. The use of your crops is at your choice.

Peppers

They are also an important part of worldwide vegetable production. It is grown for its fruits that are rich in carbohydrates, organic acids, vitamins (C, B, and E) and mineral salts (Ca, Fe and P). The capsaicin gives some

peppers the spicy quality and its use in the pharmaceutical industry. It can be used fresh or in cans, pickles or other processed foods.

It has its origins in Mexico, it's a plant used to the humid tropical climate. In Europe, it began spreading in the 16th century and then, worldwide, all through tropical, subtropical and temperate climates.

They need water, light and 60% humidity of the soil. They are plants that already grow vertically, so they only need our guide and support in getting as high as possible, normally 35 inches, certain varieties almost 78 inches. The varieties to grow on our urban garden are plenty, we should get as colorful as we like, going from Carmen peppers, yellow, green or red Bell peppers, Fresno peppers, Jalapeno, Chili, Serrano, Habanero, Anaheim to banana pepper or pepperoncini. It all comes to your taste.

The things to consider are**:**

Temperature. It needs high temperatures to have big ripe fruits.

Light. It needs intense sunlight for few hours or ordinary sunlight for at least 10-12 hours a day.

Soil. It's best if we use a soil rich in humus with a 60% rate of humidity.

Space. It has a pivoting root that can go 25 inches deep, its stem is medium, but it needs at least 11 inches of void space all around since the fruits are big enough and also very sensitive to touch (it's for the best to give them more space then crowd them and risk touching the fruits every time we have to tend them).

For peppers using seedlings is also the best method of planting. So, when we have our best location, the proper steady support we can proceed with preparing the soil. Turn it till it becomes soft enough, water it and add fertilizers rich in nitrogen.

Carefully pull out the seedling from its container and crumble the soil around the root and then place it in the 3-inch deep hole, then, cover with soil and water. If you have enough space, know that peppers come better in rows, but that's not a rule that can't be broken. An important thing is the stake, always a steady plastic or wooden one, since it will take at least two months until we harvest our peppers. This should be buried deeper and secured to the vertical support with strong wires.

Cut the two leaves that are closer to the ground and fix the seedling to the stake using strings.

Tending peppers is much easier since the only thing to do is keep on securing the stem to the stake occasionally and snatching some weeds (if

necessary). Watering should be done often and with small quantities of water. Adding natural fertilizers from time to time, to maintain the balance between the nitrogen, phosphorus, and potassium.

One thing that is necessary for obtaining less but larger fruits is snatching some of the flowers, allowing only some of them to reach maturity. 10-15 peppers on a stem are more than enough.

Weeds and pests are not such a big problem. In small places and containers like ours, there's little space for cutworms, flea beetles, hornworms or whiteflies. If they occur though, the best thing to do is get the proper advice from your local provider. As I already mentioned for the tomatoes, using good soils, good seeds and our own compost saves us from a lot of trouble and extra work.

Harvesting the first pepper may take a bit longer than it took for the tomatoes, at least three weeks. It always starts with the first ripe fruit and so on, until the last one.

Eggplants

They are the third component of this family and a very important one, due to its worldwide use in canned foods. They contain carbohydrates, proteins, vitamin B1 and B2 and potassium.

Their origins are in India (a tropical climate). From there, they spread through China and Japan, all the way to Europe and America.

There are a few varieties of eggplants: globe eggplant (American), Italian, Japanese, white, graffiti, Indian, Rosa Bianca, Thai, and Filipino eggplant. Every one of these grows well on our small project.

They are tall plants (up to 60 inches), so keep in mind to use proper support. Extra support is needed since the fruits are quite heavy (you may obtain 1-1, 5 kilos per fruit if everything goes well).

The things to consider are:

Temperature. They are the most sensitive when it comes to warmth. They need plenty of it to be able to flower and fruit and get to ripeness.

Light. The more light they get, the better it goes.

Soil. They need sandy or clay soils, rich in humus, with a 70-80% rate of humidity.

Space. Their roots are tiny, but the stem is medium-sized, so they shouldn't need more than 8 inches space from one plant to another.

Seedlings are the best way to grow our eggplants. The soil must be turned and watered ahead. The depth should be around 2-2, 5 inches. Place

the seedlings into the hole and cover with soil and compost or natural fertilizer. Tending is not hard, all it takes is the proper, steady support (the eggplants are heavy) and the strings to secure the plant to our vertical container or support. We can use trellises, with 3-4 strings, forming a v-shaped pattern of our stem and maintaining it through the entire production. This will help us discard some useless leaves and small branches that were only consuming the nutrient elements, with no positive, productive result.

Harvesting starts with the first ripe fruit and goes on till the last. You can use them fresh or for any canned food that comes in mind. In Italy, they are mostly used on the grill, one of the most delicious ingredients of the famous Mediterranean diet. In eastern European countries, they make a fabulous eggplant paste to spread on bread and eat as an appetizer. And then again, everyone has their own way of enjoying everything.

2. Cucurbits

Cucumber

They are vegetables that are grown for their fruits, which are rich in carbohydrates, lower levels of vitamins and high in mineral salts like Ca, Fe and Cu. They have the most exquisite taste. They are used fresh or in canned foods, like pickles or marinated cucumbers.

Their origin is India, through China and Japan they were brought to Europe in the antique times of Romans and Greeks and then, worldwide spread.

They don’t need much sunlight, but they need water and 70-80% rate of humidity in a soil rich in humus. Eventually, add animal manure (mentioned in some chapter above). It is not a vertical plant, so it is a bit of a challenge for us growing it on vertical supports or containers. Its roots are long (they can reach up to 60 inches), but they spread horizontally, not more than 11 inches deep, so, the stem tends to behave in the same way. We must teach them who’s the boss.

There are several types of cucumber, but the best ones to grow in our limited space are the small varieties, such as garden cucumbers, Gherkins, Kirby—those that are most suited for pickles. They are also varieties with higher productions. An important tip is not to let them grow very much or too ripe so that they don’t get the bitter taste that often appears in such cases. The bitter taste can also be caused by lack of humidity, excess of light and too much handling of the stems.

So they don’t need that much light, but they like water and a rate of humidity of the soil around 75-85%.

The things to consider are:

Temperature. They are sensitive plants when it comes to heat, even the soil should be more worm.

Light. As I mentioned above too much direct light is not good, it accelerates the aging process.

Soil. It needs a soil rich in humus, soft enough to allow roots to do what they want, yet heavy enough to retain as much water as possible.

Space. Since it is a vertically challenged plant, we must do our best to control its natural horizontal way of growing. We only have to prepare our trellises or any other kind of vertical support that we came up with to assure this plant the proper support that it needs to grow vertically. It shouldn’t need more than 15 inches space all around, but we must place it as near to the ground level as possible, to reclaim all its length.

There are three main types of vertically growing cucumbers:

-classic or v-shaped -the main stem is always directed upwards. The lower sprigs (those up to 19 inches high) are removed and the fruits also. The other sprigs that appear within 59 inches are pinched after the first fruit pops out (they should be pinched two or three fruits above)

- “locks” shape - it’s like the first one, the only difference is that instead of pinching the higher sprigs, you let them grow and hang over the rim of the trellis until they reach at 39 inches to the ground level

- “pergola” shape- it has developed a lot lately, given the fact that its results are a bigger yield in smaller places and in less time possible. The plant is forced to vertically grow until it reaches 55 inches high, then horizontally for the other 40 inches. Under 31 inches no sprigs and no fruits are left on the plant, above that level, we should leave only 3-4 sprigs with 8-10 fruits each. On the horizontal side, we should leave only fruits, at each knot of the stem. When the plant reaches the 40 inches horizontal length then we should cut the tips.

One important aspect is to always take off the larger leaves. It allows the fruits to grow bigger and obtain more easily the nutrient elements that they need.

Cucumbers may be planted directly, making a 1, 5-inch hole and placing 3-5 seeds on the nest or indirectly, by using seedlings. When using seeds, after they got out and are strong enough you must snatch the weaker ones to

let one or maximum two plants in the nest. Each method has its benefits. The important thing is using manure if you have the possibility, it enriches the soil with all nutrient elements. Think that there are cases when cucumbers grew only on manure, no soil needed. Compost is also one of the best methods of ensuring the best conditions for our plants. Fertilizers should be used weekly, at the same time with the irrigation.

Their roots are small, so we need small to medium containers. It is a plant that likes to spread a lot, but with the proper binding, we can make it grow the way we want it to grow.

As I already mentioned, the cucumbers need protection from too much sunlight, so in the middle of the summer, if our vertical garden is in the backyard, we must take some measures in covering the plants.

Weeds, pests, and diseases are not a big issue. If something should come up and the natural solutions like nettle and comfrey don’t work, please call the local provider.

Harvesting begins quite early and shouldn’t take long. The cucumbers, if not used for seeds, must not be that big or that ripe when consumed fresh or even for pickles. When they are smaller are more tender and sweeter.

Squash

It is a plant grown for its fruits that are used in preparing different foods or in the canning industry. It contains proteins, carbohydrates, vitamin C and mineral salts.

It has its origin in Central America, from where it got worldwide spread.

It needs plenty of sunlight, but not that much heat, so a shady place is more suitable. It needs a moderate quantity of water, due to its pivoting roots that go deep in the ground in search of any water trace available. This makes it drought resistant.

The things to consider are:

Temperature. It needs high temperatures (climate and soil) to get the best of fruits.

Light. It’s a light-sensitive plant. In hot summer days, we should better find ways to cover it a bit.

Soil. It needs a soft and rich in humus soil.

Space. It has pivoting roots, so we need small or medium containers. The stems are born to spread, but we will arrange them in the smallest areas

without problems, so, they will need 15 inches space all around them. It’s best if placed as closest to the ground as possible.

Planting, as with cucumbers, may be done in two ways: direct seeding or seedlings. It requires 1, 5 inches deep nests. When using seeds you should put 5-6 on the ground and when they are strong enough, you should let no more than two in the nest. The important aspect is manure or compost.

Using seedlings is always the most efficient method since it helps us save time.

Tending is like that of cucumbers, the only difference is leaves. Squash leaves are much larger. We need to constantly cut those bigger ones off. In this way, our fruits get more light and more nutrient elements as possible. Another secret is harvesting the fruits not when are ripe, but when they are big enough for our purposes. In this way, they are more tender and sweeter, and it will also allow our plant to keep fruiting and fruiting.

It is a spreading plant, hence vertically challenged, therefore steady vertical support is needed.

Natural fertilizers and irrigation should be applied once every two weeks. Water is not needed as much, but it is needed regularly.

The fruits are always for the best if used fresh; harvest not when very ripe or too large. So harvesting starts with the first big enough fruit and goes on till the last one. The use varies from one country to another, for example, in Italy, they eat the flowers, one of my husband’s favorite recipes.

Processed foods are an important aspect of worldwide squash production.

3. Fabaceae

Beans

Beans are cultivated for their fruits that are rich in carbohydrates, vitamin B1 and B2, carotene, ascorbic acid, and a mineral salt, such as K, Ca and P. Additionally, they have the sweetest taste that children enjoy very much.

Beans are grown worldwide and used fresh or canned.

Their origin is Central America. Amerindians had the greatest role in maintaining and spreading this plant all over the world. Think that they grew beans along with the stalks of corn—natural, witty support for the

beans. And, at the same time, in the middle of the stalks of corn, they grew squash, naturally shadowed by it. It got to Europe in the 16th century and then worldwide spread.

There are two main types:

-Phaseolus vulgaris nanus – a small plant, it only reaches 20 inches high, green

-Phaseolus vulgaris communis – the taller type, it can reach up to 100-120 inches (if we let them).

Besides this classification, there is another one when it comes to beans. And is that of how the bean pods are like. Here we have plenty of types, the most common ones are:

-green pods

-yellow pods.

They need a warm climate and not that much light.

The things to consider are:

Temperature. These plants don't require high temperatures. In fact, in hot conditions flowers easily drop and the plant stops growing.

Light. They need sunlight but are not dependent on that. Rainy, shady days are somehow welcomed.

Soil. They need soft soil, with mixed texture, brown is best, with a 65-70% rate of humidity.

Space. They have pivoting roots, so do not require large pots, medium and even small should be more than enough. The space around it is a bit of an issue since its leaves are plenty. The plant grows like a bush. Given the height that it can reach we should prepare steady vertical support, all through trellises, wires, and ropes.

Direct planting is the method for beans. Once the spot is ready and the temperatures are good, we should proceed with planting our beans. Do not make very deep holes, hence it may delay the rise of our plants. As I already mentioned in the chapter above, placing the seeds in water for some days turns out to be a great help for the plant's growth. Five seeds are more than enough for one nest.

It needs watering from time to time and adding fertilizers once or twice. The soil around it also needs turning from time to time.

The best spot depends on the type that you're growing. The tall type is best if placed as near to the ground as possible. Once you place your stake there's not much work to be done, beans are plants that naturally curl

around each kind of support they encounter on their way up. Exactly like ivy. That's why it could be an original division wall.

For the short type, there's no limitation. Choose the containers you like, in the wanted shape and color. The number of seeds that should be placed in one nest is the same. The advantage here is that the bush is smaller, so we have more possibilities in what concerns the location of our beans.

Green peas

They are from the same family with the beans and are rich in carbohydrates, lipids, and proteins. They also contain a lot of vitamins, such as carotene, vitamins B, C, K, E and P and mineral salts like K, Ca, Mg, P and Fe. They are grown for their sweet fruits, used fresh or for processed foods. Their origin is Asia, being one of the eldest plants on Earth. In Europe, they were first used in England, in the 13th century.

There are two main types:

-Pisum sativum vulgare- with smooth round peas

-Pisum sativum saccharatum- with big wrinkled peas.

There are also two types of green peas in what concerns the height: one small, the one that we should use and the taller one that can reach up to 78 inches. They are hanging plants and do their own climbing. The only help they need from us is getting steady support.

They things to consider are:

Temperature. They thrive in temperate climates and are resistant to cold, even frost.

Light. It doesn't need a lot of sunlight to grow. 4-6 hours of sunlight a day is more than enough to assure its normal growth.

Soil. They need sandy loam soil, rich in humus, with a 70-80% rate of humidity.

Space. We should do exactly like in the case of beans. Use stakes as support and give them some freedom or simply show them the way to grow.

Planting is done directly, with seeds, in rows. It is one of the few plants that should not have the soil turned around their roots, because they have pivoting roots, but they also spread on the ground so it makes it a bit difficult to turn the soil without harming the roots. For this reason, this plant needs more herbicides.

Weeding and watering should be done when needed, peas do not need water every week. Think that their pivoting roots can get down to 25 inches

to find water and other nutrient elements. But never let more than two weeks pass without watering.

We should start harvesting when almost all our pods have reached ripeness. In this way, the peas are still firm and sweet. If we let them too much on the stem the peas will become harder and will no longer be suitable for canned foods.

1. Leafy green vegetables

Lettuce

Lettuce (the most known varieties Iceberg and Romaine), Endives, watercress, kale, arugula, and other varieties are the best ingredients for daily diets or simply healthy eating. They are small plants, rich in vitamins and mineral salts and they can be used fresh all year long. Children also love them. They have a sweet taste and one can eat them like they were fruits.

Their origin is the Mediterranean area. It is an antique plant, old Romans, Greeks and Egyptians used it. In those areas it grew on its own, becoming in time a house plant.

The things to consider are:

Temperature. They need high temperatures. They need warm cozy places to give their best, largest and greenest heads.

Light. They need a lot of sunlight to get the best crops.

Soil. These plants need mixed soils, rich in humus and with a 75-80% rate of humidity.

Space. Their roots are small, but the heads need a bit of space, so choose the smallest containers, but make sure to leave enough space through one plant and the other to get the best results.

Planting can be done with seeds or seedlings. The second method helps you save some time. They are planted in rows, and as I mentioned in some chapter above, the important thing is snatching some plants once they get strong enough, to give the heads the needed space. One of my favorite ways of growing lettuce is using Bosske Sky Planters. In my kitchen, you will always find a head of lettuce hanging from the ceiling. From January to December. I don’t know why, but I love it.

For plants like arugula and watercress, it also takes rows, but space is not a big issue. These are smaller plants that grow better in groups. It becomes easier to collect the leaves if they are closer together.

Turning the soil is important. So are weeding and watering. Harvesting is at your choice. Don’t let them overgrow (they will lose their tenderness) and once the flowers appear it changes its taste.

Spinach

Spinach is worldwide known as the most important source of iron for us. And it is not a myth, it’s a fact. It also contains great quantities of vitamins (C and A) and mineral salts, like P, K, Ca, I and Cu.

Its origins are from Central Asia, in Afghanistan and Iran, it grows naturally. It loves a temperate climate. It is grown for its big leaves.

The things to consider are:

Temperature. It is a plant that doesn’t need high temperatures, it is quite resistant to cold. And it is also the first plant that you may grow in your garden, in some countries, the end of January is the best time to get started.

Light. Spinach is dependent on sunlight, but too much light causes the plant to flower prematurely so, spring and autumn are the best seasons to grow it.

Soil. It needs sandy loam soils, rich in humus and with a high rate of humidity.

Space. Their roots are pivoting so use medium containers, but the heads need extra space, so keep in mind to give them plenty of space to develop beautifully.

Planting is direct, using seeds. It is done in rows, not very deep holes.

Tending includes turning the soil, watering and the most important aspect, adding nitrogen-rich fertilizers.

1. Root vegetables

Carrots

Carrots are grown for their roots. We use them fresh for eating or drinking (juice) and even for canned foods. They are rich in vitamins (E, B1, B2, and C), carotene and mineral salts (K, P, Ca and Fe). They have great nutrient and therapeutic value.

They are also an important source for feeding animals like horses, milk cows and rabbits.

Their origins are hybrid, some say from South-East Asia, others say Mediterranean area where it grows naturally. The domesticated carrot appeared only in the 10th century and then spread worldwide.

There are more varieties that we can grow in our vertical garden, choose your favorite and let's get started. They have conical roots, so we will need medium containers. The stem and leaves don't need much space so we will have plenty of choice for our carrot spot.

The things to consider are:

Temperature. They need a moderate temperature. If it's too cold the root won't be able to grow as it should, if it's too warm leaves will be beautiful, but roots will remain small.

Light. They need plenty of sunlight to get the best crops.

Soil. They need soft soil, rich in humus and with a 65-70% rate of humidity.

Space. We may use medium containers that will allow our roots to grow properly. The space above ground is not that important, we can mix them with other plants as we wish. I like to grow scallions in the middle of carrots, for example.

Planting is done only with seeds; they are organized in rows. The important aspect is to snatch some plants once they are strong enough, to give the roots the needed space to grow, hence obtaining great crops.

Tending is easy, we only must turn the soil from time to time, pulling out some weeds and watering, only when needed. Too much water is not good for carrots.

Harvesting starts when the fruits are big enough for our purposes. They will never get too ripe. The best way to maintain carrots is by leaving them on the ground, but we must deal with limited space, so maybe it's for the best placing it in wood boxes in the basement.

Radishes

They contain carbohydrates, vitamins C, B and P, and mineral salts, like Ca, P, K, and Mg. They also have a diuretic, bactericidal and anthelmintic action on our bodies.

They are grown for their roots, which can be red, white, or purple.

Their origins are from China and Japan. Some say Mediterranean area, but there's nothing to corroborate it. Their roots can reach 11 inches depth

and are not tall plants. Think of small or medium containers when you want to grow radishes.

The things to consider are:

Temperature. It doesn’t need very high temperatures; it thrives in a moderate climate.

Light. They need plenty of sunlight to grow beautifully.

Soil. These plants need soft soil, one that retains water, with a 70-80% rate of humidity.

Space. We need their roots, so no great space is needed. The leaves are also quite small.

Planting is direct, using seeds. It is done in rows, and it certainly is for the best if we snatch some pieces when they are strong enough. Roots need space to develop. Turning the soil from time to time is recommended.

Weeding is not an important issue, as for any other plant in our urban vertical garden.

Beet

Beet is another vegetable that is grown especially for its root. It contains carbohydrates, vitamins B1 and C, mineral salts like K, P, Ca, Fe, Na, and Mg. It is a natural alimentary pigment.

It has its origins in the Mediterranean area, thriving in a subtropical, temperate climate.

The things to consider are:

Temperature. It is a cold-resistant plant.

Light. It doesn’t have special demands in what sunlight is concerned.

Soil. It needs clay or sandy soils, rich in humus and potassium and with a 60-65% rate of humidity.

Space. It needs space for the root. So, use medium containers that allow it to grow freely.

Planting is done directly, using seeds and in rows. Once we find our best location, we may plant the seeds, not in very deep holes.

The weeding, turning the soil from now and then, and irrigation are the only actions that we must perform to tend our beets.

As for the fertilizers to use, animal manure or compost are the best. They maintain the perfect balance between nitrogen, phosphorus, and potassium.

Harvesting should start in the fall, with the first ripe fruit. They should be kept in the basement, with low temperatures and high levels of humidity.

1. Cruciferae family

Cabbage

It is a plant grown for its head. There are a few varieties of cabbage, but white cabbage, red cabbage, savoy cabbage, and Brussels sprouts are the most encountered.

They are rich in vitamins (K and C) and mineral salts. They are used fresh or for pickles or as tasty side dishes (Brussels sprouts). They are even used in medicine, for the treatment of the stomach ulcer.

It's an antique plant, old Romans, Greeks, and Chinese cultivated it. Its origin is the Mediterranean area. The new varieties, obtained from the wild species, were introduced in Europe in the 12^{th} century.

The things to consider are:

Temperature. They are resistant to cold; they enjoy low temperatures.

Light. They need sunlight and plenty of it. In long sunny days, cabbage can grow quite large. Lack of light causes the head not to develop normally, it stays small.

Soil. They need mixed soils, rich in humus, with a 70-75% rate off humidity.

Space. They have pivoting roots, but the stems are quite short, they won't reach more than 12 inches high. Except for the Brussels sprouts, they are the taller ones and can reach up to 40 inches. The outer space, the one around the stems could be an issue in our vertical garden. That's why I only recommend it for backyards, never for apartments.

Brussels sprouts are quite a different plant. One may find it hard to believe that they are all part of the same family. As I already mentioned, they are tall and the fruits grow at the pit of the leaves, that grow on the stem. Under each leaf, we find these buds that eventually grow into 50 or 60 small sprouts.

Planting is indirect, using seedlings is the best way, since it saves us a lot of time, and gives us the chance to start with strong and resistant seedlings that will ensure a good crop.

Tending means weeding, turning the soil once or twice, watering (they need a lot of water to grow big) and fertilizing. We must use a lot of organic and mineral fertilizers. If natural fertilizers do not assure the perfect balance

between nitrogen, phosphorus, and potassium, then we must use chemical fertilizers, since cabbage needs a lot of nutrient elements.

Pests could be an issue for our backyard, but a natural solution like nettle and comfrey should manage. If not, get the advice of your local provider.

Harvesting starts with the first ripe and big enough fruit. Maintaining cabbage is done best on the field, but if limited space is an issue then you can simply place them in cool spaces or proceed with making pickles, steaming, stewing, braising or fermenting it.

Cauliflower

It is a plant also grown for its head. It is consumed fresh, for pickles, marinated or for canned foods.

It is rich in carbohydrates, vitamins B and C and mineral salts. It has a considerable dietary effect and it is recommended for children or elderly people daily nourishment, due to its high digestible properties.

It thrives in a temperate, subtropical, and tropical climate. Maybe its origin is Crete, but there are no certain data to attest to it. It is assumed that it spread from there in the 16^{th} century.

The things to consider are:

Temperature. It needs high temperatures in any stage of growing, flowering and fruiting. If not warm enough the flowering and fruiting may stop.

Light. It needs plenty of light while it is still a seedling, but once the head is grown the light is no more an important issue.

Soil. It needs a soil rich in humus, with a 70-80% rate of humidity and a lot of nitrogen.

Space. It has pivoting roots, but the stems are quite short. So, we better use medium containers that will allow the stem and the head to grow.

Planting is indirect, using seedlings helps us save a lot of time. It is done in rows.

Tending means turning the soil once or twice, weeding, watering (they need a lot of irrigation, especially while the head is forming) and fertilizing. They need extra nitrogen, so, if animal manure or compost is not enough, please use chemical fertilizers that your local provider will surely obtain for you.

Harvesting should also start in early autumn, but the first ripe fruit is always best. The more tender they are, the tastier the crops.

1. Bulb vegetables

Onion

A vegetable that is grown for its bulb. It is rich in carbohydrates and mineral elements, such as K, P, Ca and Fe. They are also known for their antibiotic effects.

It is grown for its bulbs, but in early spring its leaves (scallions) are most searched as a natural spice for any green salad. Its origin is Central Asia, from where it spread worldwide.

Its well-known varieties are yellow, red and white. Onions are grown for their bulbs or scallions in spring.

Its origin is Central Asia.

The things to consider are:

Temperature. They need moderate heat.

Light. They need plenty of sunlight. If there are some rainy days, don’t worry. They will keep up with any weather conditions.

Soil. They need soft sandy loam soils, with moderate humidity.

Space. Their roots are those we are after, but they are not very big, so think of small to medium containers. The stems are also small, so we won’t be needing that much space.

Planting is not direct, nor indirect. No seeds, no seedlings involved. We shall use small partially grown bulbs called “sets”. They give us a good start and helps us save time.

Tending means turning the soil often, being careful not to touch the roots, watering, weeding and using natural fertilizers.

Pests and diseases are not an issue in our vertical garden.

Harvesting starts when the stem is all dry. It is not a good idea to leave the onions in the ground. As soon as the stem is dry, we should collect all bulbs and keep them in shadowed spaces.

Leek

Leek is another bulb vegetable. Unlike onion, the leek produces a long cylinder of bundled leaf sheaths. It has a sweeter taste than an onion. It is used fresh or for canned foods, such as concentrated soups.

It has its origin in ancient Egypt. It was used for medicinal and culinary purposes.

The things to consider are:

Temperature. It prefers high temperatures; summer is the best season.

Light. It needs a lot of direct sunlight.

Soil. The soil must be soft and well-drained.

Space. Its roots are small, but the “stems” get quite tall. Small to medium containers are needed.

Direct planting is the best method. Tending involves watering from time to time, weeding and turning the soil once or twice.

Harvesting starts quite soon; you can harvest them when they are about the size of a pencil or you may let them get larger. It will take up to six months from planting. You can leave them in the ground during winter if you like. Cover it well though.

So, these were the vegetables to grow in our urban garden. Please feel free to experiment on every plant that comes to mind. There are no written laws that only these vegetables can be grown in a vertical garden. Use your imagination and try to overcome boundaries.

The next chapter is on vertically grown fruits. I hope you enjoy it as much as I did.

Fruits for vertical gardening

Fruits are also a category of plants that most people enjoy for their taste.

Since we have limited space, why not do our best to grow fruits that we like, fruits that will make our children happier or simply aesthetic plants for our cozy minimalist home.

Strawberries.

They are plants that don’t grow vertically. They like to spread. You will see the roots forming at the point that stems touch the soil.

There are two types that we can grow: June-bearing strawberries and ever-bearing strawberries. Since we use limited space, why not use the ever-bearing type. It will give us more fruit and more pleasure.

Strawberries are grown worldwide for their fragrant fruits. We use them fresh, or for making jams, juice, pies, ice cream and milkshakes. It can also be used in the beauty industry, artificial aromas are used for candles, soap, perfumes and other products.

They are rich in vitamins (an excellent source of vitamin C), unsaturated fatty acids and mineral salts.

Their origin is Europe. The French started taking them from the woods and domesticate them, in the 14th century. In the 16th century, it got to England, and from there it spread all around the world. Even back then they were known as a cure for depressive illnesses.

The things to consider are:

Temperature. They like high temperatures. That’s why we should plant them at the end of the spring and during all summer.

Light. They thrive in full sunlight. Their fruits get all the nourishment they need and grow larger and larger if they are placed in a sunlit spot.

Soil. They prefer sandy soils, with a great capacity to retain water, and a high rate of humidity.

Space. As I said they are spreading plants, with small roots. Small containers are the best. Keeping the stem within certain limits will give us the extra work. If they don't have too much soil all around them, they won't be able to grow other roots. So, it will be easier for us.

Planting for the first time is done by using root cuttings. They will remain there forever, but you will have to change your plants after 1 or 2 years. After this period your plants will lose all good properties and they will not give you big and good fruits anymore. No matter how much you nourish or water them, it's just the way it goes with strawberries.

Once the plant grows and flowers, you may simply cut the tips to keep them from overgrowing. Turning the soil should be done from time to time, being careful not to hurt the roots.

Weeding is also important, and watering should be done quite regularly. They need plenty of water, to give us bigger fruits.

My favorite way to grow strawberries is by using the Bosske Sky Planters. Watering is very easy to do with these special containers. Even if you forget to water them for a few days (to me it happens a lot), no harm is done, due to their special irrigation system. Stay assured that these hanging containers will add a bit of color to your kitchen or living room.

Manuring is an important aspect. Nitrogen fertilizers should be used before planting. Natural fertilizers and compost are the best choices, but if they won't ensure the adequate levels of phosphorus you must add artificial fertilizers.

Pests like slugs, moths, fruit flies, beetles, and others are those who attack our plants. Unfortunately, we can only choose chemical products to fight them.

Harvesting is to be done daily and lasts all summer long.

Raspberries.

They are wild fruits. Only in the 19th century, the cultivation of raspberries got ahead. They are rich in carbohydrates, proteins, vitamins and mineral salts. They have a great, flavorful taste. We use it fresh or for making jams, marmalade, syrup, ice cream, even liquors, and wine.

Their origin is prehistorical. Some considered they came from Crete and some are quite certain that they came from eastern Asia, from where it spread worldwide.

They are invading plants, so we must teach them who the boss is. When we want to grow raspberries, we must keep in mind that there are two main

types: one that gives fruits once a year and one that gives fruits all year long.

The things to consider are:

Temperature. It is quite a sensitive plant, it doesn't like low temperatures in the rest period, nor high temperatures in the summertime. So, we should cover them somewhat when it's cold and assure them with a bit of shadow when it's too hot.

Light. They are plants that thrive in sunlight. More light they get, tastier fruits they give.

Soil. The ideal soils for raspberries are sandy or clay soils, with a great capacity to retain water, rich in nitrogen and potassium and with a 70% rate of humidity.

Space. Their roots are quite small and grow mostly near the surface of the ground, but the stems are quite tall. They can reach 60 inches. So, we may use medium containers. It's for the best to place them as near to the ground as possible. Once you plant your raspberry keep in mind that it's an invading plant. The work will surely be around keeping it within certain boundaries and not let it grow too wild.

The best way of planting raspberries is by using root cuttings. The holes shouldn't be deeper than 6-7 inches. They should be planted in spring, ensuring the proper space from one plant to another. One important aspect is the proper support, stakes are more than enough.

Tending is not hard at all. You don't have to turn the soil or snatch the weeds. You simply have to water your plants, if needed.

Regarding pests and diseases, we may have a little extra work. There are some diseases to consider, and they are Raspberry bushy dwarf virus, Raspberry leaf curl, Raspberry mosaic virus, Raspberry ringspot virus, and Rubus stunt. They are all diseases that make our plant unable to grow normally and give healthy fruits. The best way to fight them is by burning the affected plants and starting all over.

The most common pests are Byturus tomentosus, Byturus fumatus, Aphis idaei, Myzus fragariae, Bryobia rubrioculus, and Tetranychus vienensis. They are all easy to fight with solutions that your local provider will give you.

Harvesting starts with the first ripe fruits and goes on and on for all summertime.

Blackberries

They are also wild plants that are grown for their exquisite fruits. They are rich in carbohydrates, vitamins (C and A) and mineral salts, like Ca, K and Na. They are used fresh or for jams, marmalade, syrup and even alcoholic drinks. The fruits and the younger leaves are used in medicine, for throat inflammation, for gastroenteritis, and being a good tonic for the digestive system.

They are old plants that grow wildly in the mountain areas, along the creeks and eventually valleys. They are invading plants. In the last century, they started being cultivated for commercial purposes, just like raspberries.

The things to consider are:

Temperature. They are quite sensitive plants. They need high temperatures in the rest period and the production period.

Light. They need a lot of sunlight to yield proper crops.

Soil. They need sandy soils, rich in nitrogen and with a 70% rate of humidity.

Space. Their roots are like those of the raspberries, so medium containers are the best to use. The stems grow a lot. If they are not kept under control, stems may even reach 200 inches long. Their instinct is spreading, not vertically growing. So control is the keyword.

Planting is done best by using root cuttings. The holes should be 6-7 inches deep. The extra work goes all on keeping their spreading under control. The stakes are important.

The difference between raspberries and blackberries is that in the second case you will find yourself with more stems. So, trellises are important, given the fact that blackberries are taller and heavier plants. As I said, you need steady supports. There are 3 ways of guiding your plant, and they are:

-one guide only- use a 95 inches tall support, well fixed into the ground, at approximately 15 inches deep and 11 inches distance from your stem. Fix all your stems to it, while they grow, using strings. Once they get to the top of your support cut off the tips.

-two guides- use the same 95 inches tall supports, one on each side of the plant. Half of the stems should be fixed to one side, and the other half to the other side. This way the plant gets more space and it’s easier to tend since it’s not that thick.

-fan-shaped guide- you can use 3 -78 inches high stakes, fixed in the ground at 78 inches distance from one to another and with three rows of

wire attached to each. Using wire or strings fix the stems to the stakes or wires, to guide them all through the growing process. When the stems reach the highest spot of your support, just cut off the tips. This system will give your plant more light exposure and steadier support for each stem.

Regarding fertilizers and watering, know that they need exactly what raspberries need.

Pests and diseases are a bit different. The most common diseases are Rubus stand, Mycosphaerella rubi and Pseudomonas tumefaciens. The best remedy is burning the affected plants and replacing them with new ones.

The most common pests are Eriophyes essigi, Byturus tomentosus, and Aphis ruborum. The only way of defeating them is by using chemical solutions or simply preventing them by using treated root cuttings or maintaining our ground sane.

Harvesting begins with the first ripe fruits and goes on and on till the last one. It could take all summer long, every 4 or 5 days.

Blueberries.

Blueberries are also wild plants, grown for their fruit. There are two types that we can grow in our vertical garden: black and red.

They are rich in vitamins and mineral salts. They can be used fresh or for canned foods, such as jams and marmalade.

Their origin is German, from the 15th century it spread in Europe. From there it spread to America at the beginning of the 17th century.

They are also invading plants and they need a lot of space, so I don’t recommend it for apartments. If you must, try it on your balcony, but never inside. It’s a big plant and it will end up eating a lot of your space.

The things to consider are:

Temperature. They prefer humid places, and not that much heat.

Light. It needs plenty of sunlight to get the best crops.

Soil. They need sandy or clay soils, rich in mineral salts.

Space. Their roots are pivoting, but the stems are quite large. They are bushes, so we need extra space. That’s why it’s best to plant them in our backyard.

The best way of planting blueberries is by using root cuttings. Place them in rows, with plenty of space between one stem and the other. They are not tall plants; they don’t even need stakes as supports. They may need stakes to confine the bush, by using strings to keep the stems together.

Watering is not a big issue; they can resist about a week without water. We should also not weed or turn the soil since their roots are quite invading.

Regarding diseases, the cleaning and burning of the affected stems is the best method of fighting. As for pests, the most common are Sesia tipuliformis, Nematus ribesii, Aphis grossulariae, and Abraxax grossulariata. These are best to fight off with chemical solutions that your local provider will surely give you.

Tending doesn't involve hard work. You simply choose your spot, plant your blueberry and keep it under control, to not overspread.

Harvesting lasts a month or two, till the ripe fruits are all put aside.

Melon

Melon is a vertically challenged fruit. We all know that it is a spreading plant. Its stems create a big web on the ground. It is a fragrant fruit, grown for its special sweet taste.

It's rich in sugar, vitamins (C, B1, and B2), and mineral salts (Ca and P).

Its origin is Asia. From there it spread to Africa, Europe and then worldwide. The most common varieties are Cantaloupe, canary melon and Honeydew.

The plant has big roots that can go 40 inches deep into the ground. And the stems can reach a length of 80 inches. So, an important aspect is steady support for our melons.

The things to consider are:

Temperature. They need a warm climate in which to beautifully grow. They don't like low temperatures. Summer is the best time to grow melons.

Light. They thrive in sunlight. The most light they get, the bigger their fruits are.

Soil. They enjoy sandy soils, with a great capacity to retain water and a 70-75% rate of humidity. Too much water is not that good though. Its long roots go deep to find the needed water and nourishing elements of the soil. Nitrogen excess is also to avoid.

Space. As I already mentioned before, melon is a spreading plant. Space becomes an issue in what stems are concerned. Use big containers.

Planting can be direct or indirect. Using seedlings helps you save time and start with strong plants.

When you chose the best spot and the best container, you must consider creating proper support. Trellises are the best. The fruit can grow quite large

and heavy, the stems don’t have the strength to keep the fruit up on their own, so I came up with the idea of a “hand” that supports it. When the fruit is formed you must craft this “hand” to support it from underneath. I use small pieces of wood, fixed to the trellises with wires and nails.

Tending means letting only two stems grow and arrange them in a v-shape. Every 4 or 5 leaves, fix the stems to your support and then cut the tips of your stems when they reach the wanted length. This will help your plant make fewer but larger and sweeter fruits.

Harvesting starts later then we may think. It takes a while for the melon to ripe. Some say that you must smell it. When the smell is good, your melon is ripe and ready to eat.

Herbs for vertical gardening

Herbs are also a category of plants that are ideal for urban gardens. They naturally grow vertically, so why not use them in our limited space.

Here it's all about taste. Each one of us has different tastes in what regards the spices to use.

Parsley.

It is probably the most common herb in the whole world. It is grown for its aroma. It can be used fresh or in cans (the conic roots are used for concentrated soups or other canned foods). It is rich in carbohydrates, vitamins (B1, B6, and C) and mineral salts, such as Ca, Fe, Mg, and K.

Its origin is the Mediterranean area. It was a wild plant, used in medicine by the Romans.

The things to consider are:

Temperature. It is cold resistant. If well covered it stands even in the coldest winter. The roots stand the cold and they will give us the seeds we need for the next year planting. It's not good to keep the same plant for more than two years. You will discover that the second-year parsley will only give you smaller and fewer leaves.

Light. They enjoy sunlight, but it's not a must-have.

Soil. No special soil needed. It's not a sensitive plant. Watering is important though.

Space. It needs small containers. The stems are not big at all.

Planting is direct. Using seeds is the best method. It is best if we use rows, and there are no issues of space between one plant and the other. The more, the merrier.

Tending means watering from time to time, weeding and turning the soil occasionally. No need for extra fertilizers. Harvesting lasts all year long.

Thyme.

Thyme is an aromatic evergreen herb.

It is an antique herb, with origins in Southern Europe, used by Egyptians, Greeks, and Romans. Romans are those that spread it throughout Europe.

It has medicinal, culinary and ornamental uses. We can use the whole plant or only the leaves. It is stored in bunches of sprigs.

It is rich in cellulose, proteins, vitamins and mineral salts.

The things to consider are:

Temperature. It is resistant to low temperatures, but it prefers warm climates.

Light. It thrives in sunny places.

Soil. It doesn't need a special type of soil, but the rate of humidity is important.

Space. It has small roots and small stems, so small containers are more than enough.

Planting is direct, using seeds. It is for the best to arrange them in rows and try to snatch some of the extra plants out, to give the stems some space. 8 inches should suffice.

Tending means watering, quite often. Turning the soil is not needed since the bush has quite a natural way of getting dense. In this way, weeding is also not necessary.

Harvesting starts after the flowering. Storage is best to be done in dry places.

Sage

Sage is another aromatic evergreen herb to grow in our urban garden.

Its origin is not quite attested. Some say, Asia, some The Mediterranean area and some South America. Anyway, it's an antique plant with use in medicine. In the present is mostly used for culinary purposes. We use the leaves and the tips of the stems.

The things to consider are:

Temperature. It is quite resistant to lower temperatures.

Light. It likes sunlight, but shadowy places are recommended.

Soil. It doesn't need special soils. The rate of humidity is important.

Space. It has small roots, but stems grow quite long, forming a bush, so think of the right location to grow it. If space becomes an issue the easiest thing to do is cutting the tips of the stems, giving it the form that we want.

Planting is indirect, using root cuttings. It's a spreading plant, so you will eventually need to keep it under control. You can use its leaves any

time you want, they will simply grow back.

Rosemary

Rosemary is a fragrant evergreen herb, with origins in the Mediterranean area. Its leaves are like needles and it is a woody plant that can last up to 30 years.

It is also a plant used by ancient Egyptians, Greeks, and Romans for medicinal purposes. It arrived in America in the 17th century. Nowadays it is used for culinary purposes mostly, being the perfect flavor for stuffed and roasted meats.

The things to consider are:

Temperature. It is a resistant plant, but it doesn't like very low temperatures.

Light. It loves sunny places.

Soil. It needs loam soils with good drainage.

Space. It is easy to grow in pots. It needs medium containers and a bit of extra space. It's a tree but we can easily keep it under control, in the form and size that we want.

Planting is indirect, using seeds will turn out impossible. So, we shall use a clipped small branch (a soft new growth, maximum 4-6 inches long) that we will plant directly in the soil, after stripping a few leaves at the bottom of it. Water it every day until you see it turning a beautiful shade of green.

Harvesting is at your pleasure. You can keep clipping leaves and small bits of stem any time you want.

Basil

Basil is a culinary herb with origins in central Africa. It has a sweet, strong smell. We only use its leaves.

It has become worldwide cultivated due to human cultivation.

The things to consider are:

Temperature. It is sensitive to cold; it likes hot and dry climates.

Light. It thrives in direct and permanent sunlight exposure.

Soil. It needs loam soils that have a good capacity to retain water.

Space. It has small roots and the stems can reach a length of 60 inches. You will need small containers, and a spot as near to the ground as possible, if you will let it grow as it likes.

Planting is to be done in spring. Seeds should be planted in small containers at the beginning of spring, and once the stems are strong enough you should replace them in bigger pots. If you use the hanging method (my favorite for all herbs), you can use the same container. If you want it outdoor, use a larger one. First, make sure that the time is warm enough.

Tending means watering, turning the soil and weeding if necessary. It doesn't need extra fertilizing; DIY compost should be more than enough.

The only issue with basil is that if you let the stems grow too much, they will become woody and will change their taste. So, leave only one stem to grow as high as it gets. It will give the seeds for the next year. The other stems you should pinch quite often, to keep your basil as tender as possible.

Cilantro

It is a herb also known as Chinese parsley. We use its seeds and leaves for their spicy taste.

It has its origins in Iran, but it spread throughout Europe and Asia. It was cultivated by ancient Egyptians.

The things to consider are:

Temperature. It is resistant to low temperatures.

Light. It doesn't need much direct sunlight.

Soil. Any soil will do, the important aspect is the humidity rate. It needs plenty of water.

Space. It has small roots and quite small stems. Small containers should suffice.

Planting is direct, using seeds. Better if given at least a 7 inches space between one plant and the other.

Tending is very easy; watering is the most important aspect. Turning the soil once and weeding, only if necessary are the other works to be done when you grow coriander.

Harvesting the leaves is to be done when you need them. Try to use only fresh leaves. If you collect them all and freeze them, they will lose all the taste. Maybe it's better to dry them and grind them.

These were the herbs that I usually grow. If some other herb comes in mind you can try your best to grow it in your vertical garden. There are no written laws that only these herbs can be grown. They are my favorites, and that's all. Use your imagination and team up with your kids (they will come up with the most unthinkable and original ideas).

Conclusion

So, we have seen that vertical gardening works. It has been used for centuries, so, why not nowadays with all those modern technologies at our disposal?

We have seen that it is the ideal method to grow vegetables and fruits in our minimalist spaces when we live in small apartments or it seems that you have the smallest backyard on the planet.

Having a good plan gives you a great start but getting along with new ideas that may pop into your mind doesn't harm your project.

Organization is the key. Keep your place well organized and you will have less work to do. Find the ideal place for your tools, for your containers and your compost place.

Tending your vertical garden is not hard. We must maintain a daily plan of work that will not be exhausting, but it will also give us the chance to make some exercise while taking care of our "babies".

Pests and diseases are also easy to handle, except for those truly nasty ones. Unfortunately, they will only be defeated with the use of chemical products.

Making our own compost gives us the chance to get green, help the environment and give our plant the natural nourishing elements that they need to grow healthy and beautiful fruits, by keeping a perfect balance between the three most important elements: nitrogen, phosphorus, and potassium.

Preparing the containers and the soil needed for each plant is maybe the most fun part of our urban project. Let your imagination run wild!

Choosing the vegetables, fruits, and herbs to plant is totally up to you. Please use the things you enjoy most. It has absolutely no sense investing your time to grow something that you don't like, and eventually won't eat. I tried to give the proper advice for the things I enjoy eating. Please, feel free to make your own choices and try your best to make it work, even if some

well-intended neighbor will ask you at some point: “What the heck are you doing?”

Our journey together has come to an end. I hope that you enjoyed it as much as I did. I hope my advice will be helpful or at least that I haven’t been too boring.

For any other advice, use the internet. Sometimes it’s a valuable help. It will give you solutions to some mistakes that beginners are predisposed to make. I have done my share, but I am happy to say that I learned something useful from each and every one of those.

Good luck with your vertical garden!

Do Not Go Yet; One Last Thing To Do

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