

Vegetables at Home for Beginners

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Vegetable Gardening

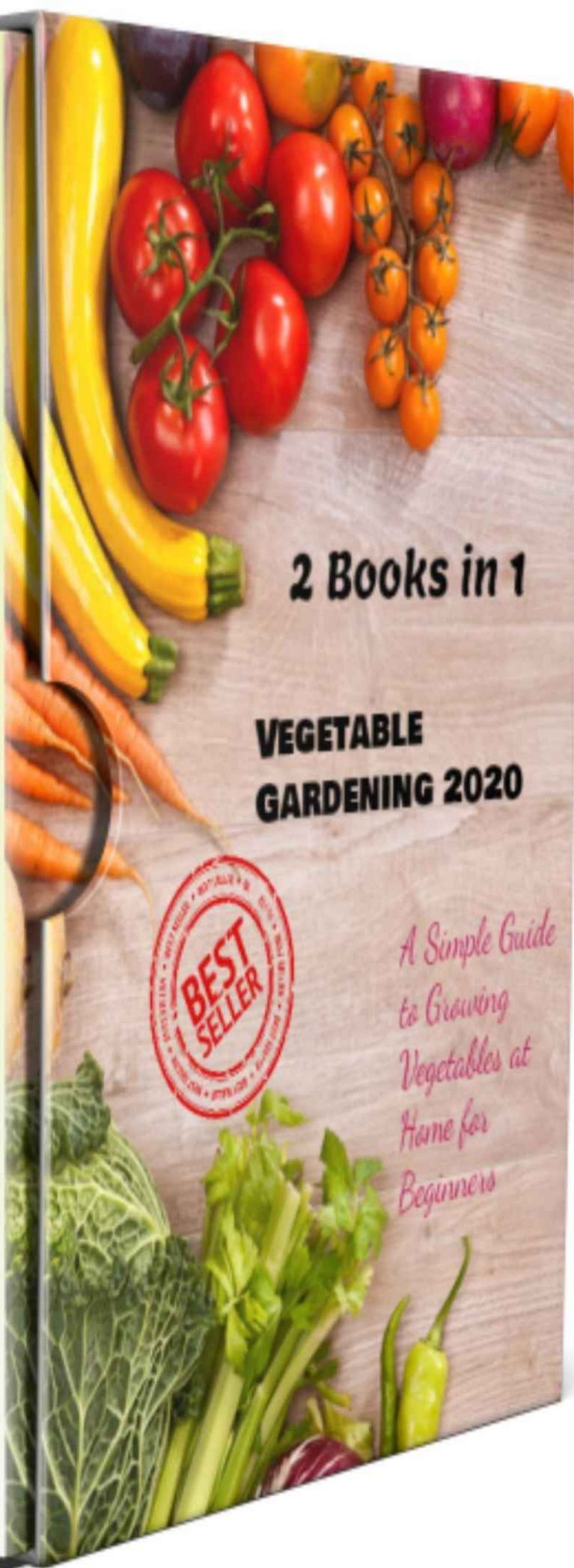
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2 Books in 1

**VEGETABLE
GARDENING 2020**



*A Simple Guide
to Growing
Vegetables at
Home for
Beginners*



Chapter 1: Introduction

As the sun sets and the sky blushes pink, you will find me wandering my rows of vegetables barefoot, basket in hand. There is nothing that I love more than this afternoon ritual of looking for what is ripe and planning my dinner accordingly. I could be pushing a wonky-wheeled shopping trolley and fighting my way through over-lit and over-crowded aisles in a supermarket, and indeed I spent years doing that. But how much easier is it to plant a garden and nourish myself and those I love, than to face the after-work rush? And how much more fun! There is nothing better than cooking a meal with vegetables that you have grown yourself. Not only is the food healthier and better tasting than the same meal made with store-bought vegetables, it is also immensely satisfying both to prepare and to eat.

Growing your own organic vegetables at home needn't be difficult. It is something that you can do very simply; even a few pots of herbs on a sunny windowsill is a wonderful start. And while it might be difficult to grow *all* of your vegetables, you would be surprised by how much you can grow even with limited time and space!

This book is the perfect starting point: a beginner's guide to starting a vegetable garden at home. It will help you plan and build a garden, choose appropriate crops and cultivate them successfully. It contains tips and tricks from experienced gardeners, and loads of ideas for gardening in small spaces like apartments and courtyards. Also, at the end of the book, you

will get some information on how to get my future Kindle books completely free. So make sure to check out the last chapter for the offer, and then dive into the world of gardening. Let's get started!

Chapter 2: Getting started – Planning your garden

If you haven't gardened before, growing your own food might seem overwhelming. My advice? Get excited, but start small! Reading this book is a great start, and for information about growing in your local area, you could also join a local garden club, visit a community garden, talk to your neighbors or contact your local Agriculture extension agent.

Many gardeners jump in head first, without doing the planning necessary to ensure their new project is successful. This section of the book will help you do the groundwork that will ensure your garden is both productive and accessible.

2.1 What do you want from your garden?

One of the most common mistakes that beginning vegetable growers make is failing to plan their garden. Before you start building, you need think about what you actually want from your garden so that you can make sure it will suit your lifestyle. Ideally, your garden should suit the space and style of your home and yard, and should not be a drain on your time or your physical abilities. Consider the following basic elements.

Appearance

What do you want your garden to look like? What is appealing to you?

Would you like a garden intercropped with flowers, or a dedicated vegetable bed? Are there any neighborhood planning schemes you must abide by with regard to the appearance or location of your vegetable garden?

Gardener's Tip:

Be realistic and plan your time – I know a school teacher who gardens one plot for most of the year and expands to 6 plots over the summer growing season when they are on holidays.

Physical abilities

How agile are you? Are you able to kneel in the garden? Or do you need a more easily accessible garden like a vertical garden or raised bed in order to avoid back and knee problems? Consider your personal situation and know if you are capable of performing difficult physical tasks. And if it turns out you need some aid, no problem! Simply figure out a plan to work around your physical state or let someone help you with some gardening tasks.

Space

How much space do you have? If you live in an apartment, you might like to try container gardening. If you do not have any top-soil, you could try a lasagna garden or a raised bed. No matter how much space you have, everyone can start a garden. It is about using the space you have to your advantage and using your imagination to optimize what you have what is your real limitation. Space for gardening is everywhere as long as there is a pot with some soil, a plant and some water and sunlight.

Time

How much time do you want to spend tending your garden? If you aren't sure, start small and expand as necessary. Time management is important because gardening is quite a time consuming thing to do. Only start a garden when you are committed to it and you are absolutely sure you can manage the multitude of different tasks time-wise.

2.2 Choosing the perfect location

Once you know what you want from your garden, you need to find somewhere to put it. The location of a garden can be the deciding factor in the health of your plants, yet vegetable patches are often an afterthought, added in an out-of-the-way corner after the rest of the landscaping is complete. In order to choose the perfect location for your garden, you need to think about what plants need to grow.

Sunlight

While some things will grow in shade, most vegetables require full sunlight, so your garden needs to be in a sunny spot. The only real exception to this is in tropical or arid climates, where a vegetable garden will benefit from afternoon shade in the summer.

Drainage

There are very few vegetables which will tolerate water-logged soil, so do not place your garden in an area that is boggy or wet. Plants need both air and water around their roots to grow, and don't like having 'wet-feet'; this is why pots always have holes in the bottom.

Water

While plants need good drainage, they also need enough water to grow. It is best to put your garden somewhere within reach of the hose, so that you can water your plants easily.

Soil

Soil is easily the most important element of a vegetable garden - it is so important that the next chapter is all about soil management! Suffice to say that if you have the option, situate your garden in the area of your backyard with the deepest top soil. Areas of loose, moist soil are preferable to areas where the soil is compacted or boggy.

Shelter

Vegetable gardens thrive in sheltered conditions. Taller plants like corn and tomatoes are easily damaged by strong winds, and winds can also cause the soil to lose water and nutrients. Additionally, a sheltered spot will protect plants from heavy frost in the winter and will have a more constant temperature.

Attention

Often we don't want a 'messy' pumpkin patch in our front yard, so we put our vegetables somewhere out of the way. But you know what they say: Out of sight, out of mind! Put your garden somewhere you can see easily from the house. If you can see your plants while you are in the kitchen, you are not only more likely to remember to care for them but also to use them in your cooking!

Gardener's Tip:

If you live in a mild climate, you can extend the growing season of summer vegetables by planting them in a sunny, sheltered spot, for example against a north-facing wall.

So, when locating your garden, look for a sunny, sheltered spot that is visible from your house and has a nice loose top-soil and good drainage. This is really a key component of being able to successfully grow any type of plant in your garden. Sunlight, water, and shelter is what let's plants thrive and what makes them happy being in their habitat. Happiness of course shown through giving you a beautiful healthy and thriving plant.

2.3 Choosing a gardening style

There are so many different styles you can choose from when building your garden. Your choice will be based on your needs, the type of vegetables you would like to grow, and the space that is available to you. Here is an outline of the most common gardening styles and their advantages and disadvantages to help you make an informed choice about how to build your garden. The examples are supported by images, which will give you an idea of what such a garden type would look like.

Gardener's Tip:

You don't have to limit yourself to just one garden style. My first garden was a container garden. When I moved to a house, I started out with in-ground garden beds. As I ran out of good soil in my yard, I started building raised wicking beds and I wouldn't grow my strawberries or lettuce anywhere else now!

In-ground gardens

These are a garden beds dug in to the existing soil. In-ground gardens are able to provide a great basis for most types of plant species. It is a basic type of garden that require little maintenance or upfront material investment. This type of garden requires at least 2 feet (60cm) of top soil. This top soil should be able to drain effectively and should be largely clear of roots from nearby

trees. This will allow your plants to not get obstructed in their own growth potential.



Pros	Cons
<ul style="list-style-type: none">• The easiest style to manage – plants tend to thrive in these systems.• Soil can be improved over time.• Low-cost.	<ul style="list-style-type: none">• Physical strength and agility is required for heavy digging when building the garden, and for extended periods kneeling to plant and weed the beds.• Terracing is necessary on slopes.

Raised garden beds

These are garden beds which are raised above ground level and contained by edging such as pine sleepers, galvanized steel or pavers. When built on a

solid surface, drainage must be provided and beds must be at least 2 feet (60cm) deep. Raised bed gardens are a good solution for gardening on concrete, or where topsoil is boggy. They are commonly used for creating quick isolated growing spaces for vegetables, herbs or berries. What is great about being able to raise your soil from the ground, is that there is a lot less problems to worry about – Soil craters will have harder time of penetrating this soil space and you will also see less weeds popping up. So if you would consider growing a vegetable raised bed by using organic growing strategies, a raised bed is an amazing place to start. However, these beds do require some up-front investments and building skills, and due to their elevation, raised beds are more exposed to the outside world making them somewhat more vulnerable and exposed.



Pros	Cons
<ul style="list-style-type: none"><li data-bbox="418 1650 776 1682">• The easiest style to access.	<ul style="list-style-type: none"><li data-bbox="867 1650 1247 1682">• Expensive outlay for edging

- Fewer weeds.
- Tidier looking than in-ground beds.

materials and soil.

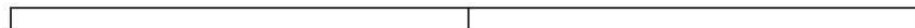
- Some carpentry skill required.
- Plants are more exposed.

Lasagna gardens

This is a mounded type of garden built on the existing soil surface from a “lasagna” of layered organic materials. Materials may vary but usually include cardboard, manure, straw, green waste and compost. This type of garden is ideal if you have very shallow or poor topsoil.



Lasagna gardens, as can be seen, are basically an elevated layer of soil on top of the original soil. This is usually done when new types of soils are introduced, other than the original soil already present.



Pros	Cons
<ul style="list-style-type: none"> • Plants thrive in these beds. • Improves existing soil. • Less heavy digging than an in-ground bed, and a little more accessible. • Low-cost if you have access to a lot of green waste and organic materials. 	<ul style="list-style-type: none"> • Can look untidy. • Soil can be displaced from sides of beds in heavy rains.

Container gardens

It is possible to have a very productive garden even if you do not have any soil. Container gardens are ideal for rentals and apartments because they are based solely in containers and pots. They can also include green-walls, which maximize space by vertically arranging container ‘gardens’ of pots or fabric.

So when you are really running out of space or places with good soil, a container garden is where you would wish to start. More than ideal is also the fact that containers such as pots are more mobile, giving you the possibility to move your plants inside during the cold winter time. The image shows a vertical variation of container gardening, which further optimizes the amount of space used for this particular garden type.



Pros	Cons
<ul style="list-style-type: none">• Little space needed.• You can garden anywhere.• Can be very low-cost if you up-cycle containers like polystyrene boxes, vegetable crates and milk cartons.• Plants are easily moved to regulate temperature and are portable if you move house.	<ul style="list-style-type: none">• Soil dries out quickly.• Soil nutrients need frequent replacement.• Plants are more sensitive to heat.• Not suited to larger vegetable plants like zucchini and corn, or perennials like asparagus and artichokes.

Wicking beds

These are garden beds or containers which contain a water reservoir at the bottom. Water is drawn into the soil by osmosis. Similar to self-watering planters, wicking beds can be easily made out of up-cycled materials like polystyrene boxes and IBCs (which stands for Intermediate Bulk Carrier). Raised garden beds can also be designed as wicking beds. Essentially, wicking beds are a creative and efficient variation to the idea of a container garden or raised garden.



Pros	Cons
<ul style="list-style-type: none">• Plants thrive.• You rarely need to water/top up the water.• The water reservoir helps to regulate plant/soil temperature.	<ul style="list-style-type: none">• Some building ability required.• Soil nutrients need frequent replacement.• Not suitable for in-ground beds.

- Low-cost if you use up-cycled materials.

Chapter 3: Soil – It's not just dirt

Soil is easily the most important element of any garden. It is so much more than just 'dirt'. Poor soil and poor soil management are the most common reasons why gardens fail to thrive, and it is such a shame that sometimes gardeners give up on their endeavors when problems could be overcome with a little knowledge. Soil improvement can be an inexact art, but rarely is it particularly difficult or expensive on a home scale.

In this chapter we will discuss the essentials of finding your optimal soil conditions for your home vegetable garden. Not only will we uncover what good soil should be made of, you will also be introduced to the methods of sourcing this soil, as well as fertilizing and optimizing it. And the last section will uncover a secret method for happy and healthy soil using humus as an ingredient. Soil is essential, so certainly do not skip this section of the story.

3.1 What should good soil be made of?

On the surface, soil is the particulate mixture of ground-down rock and minerals, and decomposed organic matter that forms the top layer of the Earth's crust. It has taken hundreds of thousands of years to form, which is why it is so important to protect and improve our top-soils. There are many different types of soil, made from different proportions of rocks and minerals. However, for the purposes of the home garden, we will look at the most common types of soil.

Sand

Sandy soils have large particles and feel gritty to touch. These types of soil hold lots of air and drain really well, but they have poor water and nutrient retention. As can be seen on the supporting image, the soil type is very loose, allowing water to easily penetrate it. Sand is most commonly found in areas where hydration is scarce, thus making it very important to improve the soil into a state where it becomes more suitable to grow vegetables on.



The growth quality of this type of soil can be improved by adding organic matter. Sandy soils are hard to grow on and should therefore generally be avoided when seeking to plant garden for edible harvest, such as a vegetable garden. You might want to consider buying some good organically fertilized soil from your local gardening store if you live in a more arid and dry area with sandy soils.

Clay

Clay soils have very small, sticky particles and will form a hard ball if squeezed together when damp. These soils have good nutrient and water retention, but can be boggy and become compacted very easily. They can be improved through regular aeration, adding organic matter, and adding coarse river sand. It is a sturdy type of soil that is very thick, especially when moisturized. The image clearly shows how the soil sticks together like a ball.



Loam

Loam is the holy grail of garden soils – as visible from the image, it has a fine particle and feels smooth to the touch. It has high levels of organic matter and good nutrient retention, but drains well. It is the perfect soil type for an organic vegetable garden and, where possible, try and use this type of soil to start growing.



Loam is the best basis for growing a vegetable garden, but this does not mean that other soil types are not suited for the job. As long as you can regulate the hydration and the nutrients of the soil, you will have the ability to successfully grow even the most difficult crops on it. Some species thrive better in sandy soils (growing dates for example is something you would expect to see on a soil with sand), whilst other species (such as potatoes) do perfectly fine on a clay-based soil.

Gardener's Tip:

If you are gardening in heavy, clay soil a pitch fork is indispensable. Force the prongs into the ground and lift a few centimeters, in order to aerate the soil in garden beds and just beyond the dripline of trees. This will reduce compaction and aid drainage, allowing nutrients and microbes to penetrate to deeper levels, and encouraging root development.

Soil is also crawling with living organisms. In healthy soils, we can see the larger of these creatures, such as earthworms, crickets, grubs and other bugs. But beneath the surface, there is much more going on. Although we cannot see them with the naked eye, soil is host to vast communities of microorganisms, including bacteria, fungi, amoeba, archaea, protozoa and even viruses! It is these organisms that give soil life – without them, the nutrients which plants need to grow are unavailable to them. Microbes break organic matter and even rock down into fine topsoil. They also reduce soil compaction, aid water, nutrient and air retention, and regulate soil temperature and pH. And the best thing is that if we treat our soil well and replenish it, these creatures will flourish without any attention at all, and so will our gardens.

Gardener's Tip:

An excellent reason to garden organically is to protect the diversity of soil microbes. Even a seemingly benign chemical spray or fertilizer can upset the delicate balance of organisms in the soil. Maintaining this balance is the best way that you can ensure healthy plants and abundant crops, so soil protection is one of the best investments you can make in your garden.

3.2 Where can you source soil for a home garden?

Ultimately, the best soil you can use in your garden is the existing topsoil – it is best suited to your climate, is likely organic, and it is free. However, it is not always possible to garden in existing soil. Sometimes the soil has been contaminated, it is not deep enough for a garden, or it has been covered in concrete.

If you need to buy soil on a small scale, the bags of organic potting mix or compost available at the local nursery or hardware store are acceptable options. They have the benefit of slow-release fertilizer included in the mix and are well-suited to container gardens. However, on a large scale these potting mixes are expensive, and they are not ideal for raised beds or wicking boxes.

For large-scale projects, the cheapest option is also one of the best: finding “clean fill”. Clean fill is any uncontaminated (organic) earthen material and can often be sourced from construction sites, pool builders, landscapers and developers. While you do need to check that the fill is topsoil, and not rock, gravel or building refuse, clean fill is the most reliable soil option for a large garden project. It tends to have better water retention, a wider range of trace elements and microorganisms, as well as a better pH value than bought soils.

If you wish to buy soil on a large scale, it is available from landscaping supply stores and nurseries. The best thing that you can buy is straight compost, but good compost is hard to find. Many landscapers sell garden soil or top soil mixes. If you can find a reputable supplier, these are affordable options for filling raised beds. However, you do need to check the soil content, as they often contain little more than sand and mushroom compost, which makes for a very alkaline soil that becomes water-resistant easily, and does not regulate temperature or retain nutrients effectively.

Gardener's Tip:

Make sure you ask your supplier if the compost you are getting is made from green-waste. Many landscapers sell mushroom compost labelled as compost. Mushroom compost can make a good fertilizer, but it is NOT the same as compost. It is the waste from mushroom farms, and contains a lot of salts and ammonia. It is very alkaline and likely to burn your plants. The two cannot be used interchangeably and if you are going to pay for compost, you want to be sure you are getting the real thing.

3.3 Happy and healthy soil – organic soil improvement

There are many different types of soil that can successfully grow vegetable plants. Don't despair if you are gardening in solid clay, or only have a shallow topsoil, as any garden can be improved to have happy and healthy soil.

Gardener's Tip:

While we can do a lot to improve our soil in a short space of time, soil improvement is definitely a long-term investment. I have gardens that I have been working for 5 years, which have only just reached a stage where I am happy with the soil. That said, I have other gardens where the soil was perfect right from the start!

We will go over some key elements of a happy and healthy soil, and how you can improve your soil to achieve them. You need to know a few basic things in order to make sure your soil stays healthy. The topic we will briefly touch upon include pH-levels, micro-biology, key nutrients and trace minerals that could be found within your soil. These are the essentials – so it can be of great help to take note of them in your own growing plan and use it to your benefit. Healthy soil is really a key aspect of any attempt to grow plants or vegetables within your garden.

Soil pH

The pH value is the measure of acidity or alkalinity of a soil; for reference, a lemon is very acidic, rainwater is slightly acidic, and bleach is alkaline. The pH of a soil is important because it influences the microbes which survive and thrive in the soil environment, as well as the specific nutrients which are available to plants in the soil. Most plants prefer a neutral to slightly acidic soil, so they like a pH value of 6.5 to 7.5.

It is important to test the pH of your soil, which can be done with an inexpensive soil testing kit. pH should be tested regularly if soil improvement is needed, as additions to the soil can have a drastic impact on pH in a short time period.

If your soil is too acidic:	If your soil is too alkaline:
<ul style="list-style-type: none">• Apply a thick layer of mushroom compost as a mulch. Use regularly.• Apply agricultural lime (calcium carbonate) once a season.• Apply dolomite once a season.	<ul style="list-style-type: none">• Add elemental sulfur, sulfates of iron or ammonium.• Apply copious amounts of organic matter with regularity.• Mulch with pine needles or coffee grounds.

Micro-biology

Different types of bacteria and fungi process different minerals and nutrients, so in order for plants to have access to a full-range of nutrients and trace

elements for growth, a full-range of microbes is required. “Good” microbes also protect plants from pathogens and disease.

Although it is possible to have soil tested for a range of microbes, it is usually enough to monitor pH and to note whether there are earthworms visible in the soil, as these creatures are the proverbial canary in the coal mine for soil scientists. Although there are microbe inoculants available to improve soils, if you have earthworms you can safely assume that your microbiology is in fairly good shape. Provided you continue to add organic matter to your soil, your population of microorganisms will multiply and diversify naturally.

Nutrients

Nitrogen, phosphorous and potassium are required in order for plants to photosynthesize and grow, with nitrogen being the most important. These nutrients are naturally present in the soil and require processing by microbes for plants to be able to access them. Nutrients are easily lost through run-off in rain, or in over-irrigation causing the leaching of the minerals from one layer of soil to another.

In traditional gardens, nitrogen-based fertilizers are used to ensure plants have consistent access to essential nutrients. While these types of fertilizers do improve plant growth, they upset the natural balance of pH and microbes in the soil, as well as causing problems on a wider scale when they are leached out of the soil by irrigation or rainfall and enter the water cycle.

Organic fertilizers are preferable alternatives as they feed the microorganisms, are less likely to burn plants and are too mild to affect the water cycle except when present on a massive scale. Some organic fertilizers include:

- Compost
- Composted horse, poultry, sheep, goat and pig manures or waste. These can be source from farmers, or commercially under brand names such as Dynamic Lifter, Dino-Fert, and Blood-And-Bone.
- Cow manure (un-composted is fine)
- Worm castings and worm juice
- Algae, sea-weed or fish waste in the form of diluted water from your fish tank, or commercial products such as SeaSol and Charlie Carp liquid fertilizers
- Home-made liquid fertilizers brewed from weeds, green-waste or manures

Trace minerals

Minerals such as calcium, manganese, iron, copper and zinc are also required for plants to thrive, and are usually present in the soil in sufficient amounts for most plants. If it turns out your mineral diversity is not sufficient (usually indicated through the lack of growth), there is a simple solution. You can also use this solution as a preemptive strategy if you already know your garden soil cannot provide all required minerals to the plants or vegetables you wish to grow.

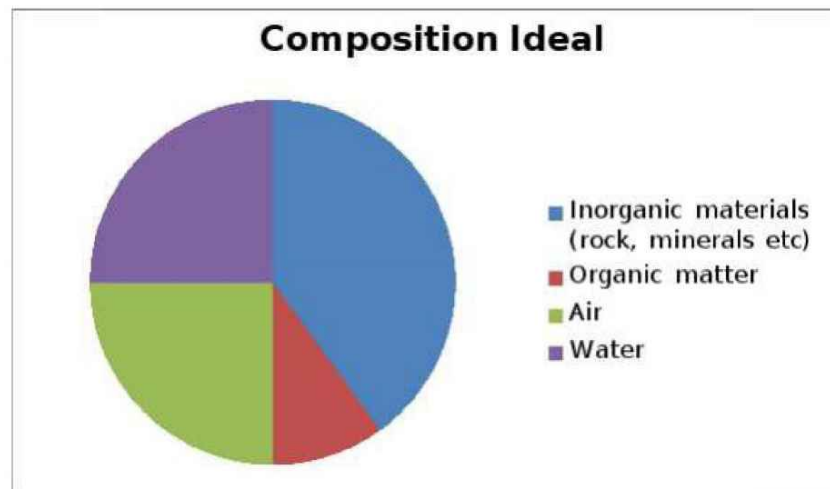
In order to be sure your plants have a full range of trace minerals, you can sprinkle 1 or 2 handfuls of rock dust or *palagonite*, which is ground,

mineral-rich rock, over every 3 square feet (1m²) of garden each season. You can get these materials in your local gardening store. If you do not know which type of soil nutrients your specific type of soil requires, ask one of the professionals within the store. They will surely know which type is correct for your soil.

3.4 Humus – The magic ingredient

Problems such as drainage, compaction and nutrient retention all come down to the soil structure, which gardeners refer to as a crumb. Like a good loaf of bread, soil needs to be light and airy, with a good amount of space between particles to allow root growth. In order to have good soil crumb, soil needs to have a mix similar to the graph below. Having the ideal soil composition is important for attaining optimal growth conditions. And there is a secret ingredient to speeding up and improving this process. You already know it is Humus – the title of this section leaves no surprises.

The secret to improving all soil types, achieving a good crumb and addressing issues related to nutrient and water retention is humus. Humus is the magic ingredient in a successful garden. But what is humus exactly?



Humus is the stable end-product when organic matter from plant or animal sources is completely broken down. It is rich, dark and smells slightly sweet. It reduces soil compaction and improves drainage by building the soil crumb. High levels of humus also help regulate soil temperature and pH, and provide nutrients and trace minerals for soil microbes to process.

So how do we get humus? By adding organic matter to our soil. While we would ideally like to add humus to our soil, it is impossible to source ethically, and creating it on a reasonable timescale for home use is impossible. But what we can do is add composts, manures and other organic matter to our soil. They aren't humus yet, but with 5-10 years of microbial activity, they will be. And even in the form of organic matter, these materials still provide many of the benefits of humus.

Gardener's Tip:

Be lazy! If you do nothing beyond adding organic matter to your soil each time you harvest a crop, you will still have successfully addressed issues as diverse as pH, nutrient levels, soil structure, temperature regulation, drainage and microbiology all at once.

Traditionally, it was believed that 5% organic matter made for good soil composition, but many organic farmers today are citing up to 15% organic matter as the secret behind their farming success. Organic matter is added to the soil through:

- Compost
- Animal manures

- Green waste (clippings, pruning material, pondweed etc.)
- Cover-crops and green manures (crops grown purely to replenish the soil, which are chopped down prior to flowering or fruiting and dug into the top layer of the soil to decompose)
- Mulch

Chapter 4: Essential tools and materials

There is not a lot that you really need to start and maintain a garden. We all have most of the key tools and materials already in our garages and sheds. But if you are starting from scratch, here are a few tips on the items that are most useful for gardening on a home scale. The materials discussed in this chapter will be key in order to plant, maintain and harvest any type of basic garden. In particular they are important if you wish to start your own homemade organic vegetable garden. We will also go over some basic structures at the end of the chapter.

Gardener's Tip:

When beginning a larger vegetable garden, it is tempting to invest in expensive and complicated tools like mulchers, mini-tractors and mechanical cultivators. Wait on it. On a home scale, this type of machinery can be much more trouble than it is worth. You can rent mini-tractors and mechanical cultivators quite cheaply, so consider trying one out before you invest. If you are setting up extensive, in-ground garden beds, renting a mechanical cultivator is a great way to do the ground work quickly.

4.1 Top tools for the home garden

The basic tools of the trade are simple and are owned by virtually all garden owners in some shape or form, but should be mentioned briefly in order to make sure you have all of them. The top used tools in your home garden are tools you would like to keep close to your high-maintenance growing places, as you will likely have to grab them a lot for various tasks. Most of these tools can be picked up at your local gardening store and are widely available for a relatively low price. It is recommended to store them in a place they cannot rust, rot or break easily. Also keep them away from children in order to make sure they cannot harm them in any way.

Spade

A spade is your go-to tool in an in-ground garden. It can be used for breaking up the soil, digging in organic matter, planting and harvesting crops. It is important to choose a spade which is the right size for you, as you will be using it all of the time. A comfortable spade has a sturdy handle that reaches at least to your hip joint, ending in a D-shaped hold. It is worth investing in a spade with a metal blade and a solid wooden handle; these may be heavier and more expensive, but for longevity, they cannot be beaten. Keep the blade clean and sharpen it regularly with a file or a grinder, and you will have a garden tool that will last for generations.



Trowel

Regardless of the style of garden you have, you will need a trowel. These small spades are used for everything from digging planting holes, transplanting seedlings, weeding, filling pots, planting seeds and even marking out garden beds. They truly are a great multi-purpose gardening tool. The trowel is definitely the work-horse of the container garden and wicking bed.



Hoe

If you are like me, you will sometimes find the weeds have staged a hostile take-over in some forgotten corner of the garden. A hoe is your best friend in battling weeds. If you can get out there every week or so and shallowly cultivate the soil between your seedlings, upsetting the newly sprouted weeds, you will solve your weed problem in a few seasons. Alternatively, you can also use these tools for creating drills and furrows for seeds both in pots and gardens. I find that large hoes are good for planting out garden beds but hard to maneuver between seedlings. If you have the mobility to spend time kneeling, I recommend a mini-hoe (for example a 'ho-mi', see image) for easy cultivation between plants.



Secateurs

Secateurs are one tool on which you shouldn't skimp. Do some research and get the best pair you can afford. If kept clean and sharpened regularly, they are another tool which will last for years. It is important to have good, sharp secateurs for pruning and harvesting, as blunt tools do not make a clean cut, damaging plants and allowing disease to enter. I also use secateurs to weed

much of the time, chopping the weeds off at the base and leaving them to rot.



Sickle

Sickles are one of the most ancient farming tools, but only a recent discovery of mine. They are a scythe-like blade on a short handle, and are comparable to a cane knife or machete. I find them extremely useful for weeding, harvesting crops and chop-and-drop mulching. Keep your sickle clean and sharp for an extended life.



Wheelbarrow

Wheelbarrows, garden wagons and the like are essential for moving garden materials from place to place. Consider how much you are comfortable lifting, and the terrain of your garden, when choosing one. If you have mobility issues or back problems, a low garden trolley or four-wheeled wagon is a better choice than a wheelbarrow.



Gardener's Tip:

If you have the space and motivation, you can compost all of the green waste from your garden. However, chop-and-drop is another option promoted by permaculturalists. Chop-and-drop is a weeding and mulching method in one, where both weeds and spent plants are cut down and left to act as mulch and organic matter on the soil where they stood. This is a great way of adding regular organic matter to your soil, and the roots of the plant, which are left in the ground, will provide food for worms and microbes, aerating the soil as they slowly rot away.

4.2 Organic fertilizers and soil health

There is a wide range of possibilities for utilizing organic fertilizers. The most ideal candidates for letting your plants and crops prosper include mulch, manure and compost. However, there are also a lot of alternatives you might or might not have thought of. Let us go over them briefly so you will get a basic idea of what could be used for fertilizing your crops if you wish to go organic.

Mulch

There are so many benefits to using mulch in your garden:

- It protects the soil from heavy rains
- It helps the soil retain water
- It adds nutrients / organic matter to the soil
- It prevents weeds
- It helps to regulate soil temperature by providing insulation
- It encourages and shelters beneficial microbes
- It can improve soil structure and prevent compaction

Mulch should be about 2 inches (5cm) thick, and a space of at least 5 inches (12.5cm) in every direction should be left around the stems of plants. It is most efficient to lay mulch first, and then clear a space to plant seedlings as needed – this prevents weed growth when a garden bed is empty and is much quicker than laying mulch around the stems of plants.

Almost any organic material which will form a thick layer but still allow water to penetrate can be used as mulch. However, different mulches have different properties which need to be taken into account when making a selection:

Bark chips, sawdust and shredded paper

These high-carbon materials make good mulch but require nitrogen to break down. They will actually draw the nitrogen that your plants need out of the soil, so you should mix them with extra nitrogen like animal manure, Blood & Bone or another fertilizer.

Cow manure and compost

These mulches are high in nutrients and will not burn plants or compete for nitrogen. Compost or cow manure are very useful for organic gardens as they are not synthetic but 100% natural. Start a compost heap in your garden if you have the space, it can be very useful if you wish to easily maintain a larger-sized organic garden.

Leaves, pond weed and grass clippings

This type of green waste is commonly available and usually cheap or free. However, leaves and grass clippings in particular have a tendency to compact and form water-repellent layers, which can inhibit plant growth. This can be combatted by laying a thinner layer of mulch (1 inch or 2.5cm), keeping the garden moist and by turning the mulch regularly. These mulches

are often more effective mixed in to the top 2 inches (5cm) of soil, as this prevents hydrophobia.

Coffee grounds, mushroom compost and pine needles

These mulches all have the potential to alter soil pH-levels. They can be very effective, depending on the existing pH of your soil, as we discussed earlier in Chapter 3. Use them in moderation to not harm the plant growth, as they can be very soil altering in high doses. As a useful side effect, coffee smells will keep away unwanted destroyers of your crops (such as your local neighborhood cats or wild foxes).

Synthetic mulches and weed mat

There are many synthetic mulches and weed mats available. Some are organic and will break down over time, while others are made of plastic. Plastic mulches and mats are problematic because they can prevent water penetrating the soil and inhibit microbial activity. Organic weed mats and mulches are usually conducive to normal soil biology, and can be an excellent solution if you want to avoid weeding, but they are usually comparatively costly.

Gardener's Tip:

Be creative about sourcing fertilizers, mulches, green wastes and organic matter: many landscapers and even local councils have green waste to dispose of; local cafés have copious amounts of coffee grounds; schools and businesses have shredded paper; stables, farms and county fairs may have manure or even composted manure to give away.

4.3 Garden Structures

While most plants will grow happily on their own, some need special structures for support or to climb. If you plan to have a more sizable garden, it is good to have a small collection of reusable garden structures available for yearly crops. Some of my favorites include the follow three types of garden structures. They are quite easy to start off with and will look amazing in any beginner's vegetable garden.

Garden stakes

Some plants, like heavily laden eggplants need extra support in the form of garden stakes. It is good to have a collection of thin bamboo or plastic stakes, plus some hardier pickets for heavier crops. The image below shows an example of a bamboo stake construction. Extra-tall bamboo stakes are excellent for climbing beans, which can grow to over 6 feet (2m).



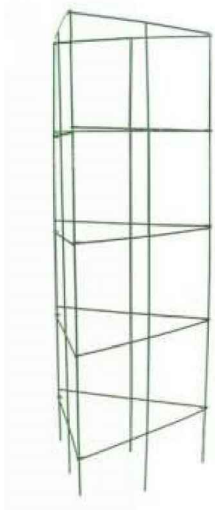
Pea netting

Unlike beans, peas grow best on netting or wire, as the small tendrils they use to climb have trouble gripping anything bigger. Biodegradable netting can be added to the compost at the end of the pea season, and hardier wire or plastic nets can be cleaned, rolled up and stored for another year. My heavy-duty plastic netting is cut into 5 foot (1.5m) sections, which are stapled to two heavy, wooden stakes. These structures are easy to move around the garden and roll up well for storage. In the summer, heavy-duty pea netting can be used as structure for supporting cucumber vines, shielding stalky asparagus from wind-damage or for protecting tempting crops from wildlife.



Tomato cages

Tomato cages are easily the most useful garden structure I have. Mine are made of fencing wire rolled into cylinders of 1.5-2 feet (50cm) diameter, but some people use cages made of stakes or pre-fabricated wire structures available from garden supply stores. These rolls are transportable and hardy. They support my tomatoes and eggplants in summer, protect sapling trees from wildlife and support snow peas and broad beans over the winter.



Chapter 5: Choosing crops – The top 10 vegetables for beginning gardeners

We only ever have limited space in our gardens, so it is important that we use this space wisely by choosing to grow crops which tend to thrive and produce abundantly. It is a lot of fun to grow heirloom vegetables like purple carrots and black Brussels-sprouts, but these types of crops are not always the most productive or easy to cultivate. While I certainly encourage you to try growing rare and interesting varieties, you should also have a core crop of productive and forgiving vegetables. There is nothing like the satisfaction of the first meal made of fresh vegetables grown in your own garden, so why not set yourself up for success by starting with these top 10 annual vegetables for beginning gardeners, chosen because they are easy to grow and produce abundantly, even in quite small garden spaces (such as container gardens on a balcony).

For choosing our crops, we will consider three different types of vegetables. First, the vegetables are discussed that can be grown year-round and therefore are great for multiple harvests. They are a sustainable choice for anyone seeking to start a vegetable garden. Secondly, there are some great summer vegetables that are easy to grow and very delicious, which we will go over in Chapter 5.2. You can think about crops like tomatoes or green beans. These can also be grown year-round in a small greenhouse, but outside will thrive only in the summer. Finally, the third section of this chapter will cover vegetables that are ideal in winter conditions and can

stand the cold like champions. Every crop will have its own detailed description for growing them.

5.1 Year-round vegetables

These vegetables are described as frost-sensitive. They can survive a light frost and temperatures around 40°F (5°C), meaning that they can be grown year-round in mild climates. In areas where winter temperatures are below 32°F (0°C), they can be grown as soon as the ground thaws in spring through to late autumn.

5.1.1 Lettuce

Fresh lettuce is significantly tastier than bagged supermarket products, and it is surprisingly easy to grow enough lettuce for a daily salad. You can supply enough lettuce for a couple in less than 3 feet squared (1m²). One of the benefits of growing your own salad greens is that you can grow a wider variety of leaves. Leaf-lettuces are recommended over heading lettuces like Iceberg as they mature much more quickly and are less susceptible to pest-damage. Oakleaf, Cos and Buttercrunch are easy to grow and can be harvested for several weeks. Bitter greens like endive, chicory and rocket are hardier than leaf-lettuces and add some bite to your salad. It is particularly nice to buy a mixed-seed, for a variety of colors and flavors.



Expected harvest:

You can harvest 1-2 leaves per plant, per day, once plants reach 5 inches (15-20cm) in size. Final harvest of one 'head' per plant at 4-8 weeks.

Propagation methods:

Start in seed trays filled with the finest seed-raising mix possible. Scatter seed lightly into prepared seed-tray and firm down well. Water lightly and regularly. Plant out when 4 true leaves have formed. Sow 5-10 seeds every week in order to have a continuous crop.

Spacing: 6-7 inches (20cm)

Height: 7-14 inches (20-40cm)

Growing requirements:

Appropriate for container gardens. Lettuce grows particularly well in wicking-beds. Irregular watering, nutrient deficiency or soil temperatures above 70°F (25°C) will cause lettuce to bolt to seed. If a seed head is seen forming, harvest whole head immediately if you do not want to save seed.

5.1.2 Radishes

Radishes are the fastest germinating seed I know of, and one of the most forgiving crops. They grow quickly, providing leaves for salads and roots for roasting and eating raw. There are many different varieties of radishes available, all of which produce well. French Breakfast radishes are great for cooking, while the smaller Cherry Belle is wonderfully dense when eaten raw. There are interesting heirloom varieties available also, like the Black Russian and the white, carrot-like daikon, which is used in Asian cooking.



Expected harvest:

Baby radishes and greens can be harvested from 3-4 weeks. New leaves are best to add spice to salads, while tougher, mature leaves can be cooked like spinach. Final harvest of one radish per plant at 4-8 weeks.

Propagation methods:

Plant direct into ground, covering seeds with ½ inch (½-1cm) of soil. Sprouts will emerge in 2-3 days. Sow seeds every 8-10 days to have a continuous crop.

Spacing: 4-7 inches (10-20cm)

Height: 6-7 inches (20cm)

Growing requirements:

Appropriate for container gardens and wicking beds.

5.1.3 Chilies

Unlike capsicums, which tend to survive for only one season, chili bushes produce prolifically and tend to do so for several years in milder climates. In places with more severe climates, they can be grown in pots and moved indoors during winter. For most varieties, one plant is enough for the whole family. If you find that you have too many chilies to cook with, try making chili jam, curry paste or a hot sauce! There are as many types of chili as there are salsas. Ghost and Bird's Eye plants produce plentiful, very hot

chilies. Larger chilies like Jalapeno and Habanero are milder but produce more slowly and are more susceptible to pests.



Expected harvest:

4-10 pounds (2-5 kg) per plant, per year. Pick when immature for a milder flavor, or when fully-colored for more sweetness and heat.

Propagation methods:

Start in seedling trays or pots. Plant seeds $\frac{1}{4}$ inch ($\frac{1}{2}$ cm) deep. Cover, firm down and water well. Keep moist. Plant out when the plant has 2-4 sets of true leaves.

Spacing: 15 inches (40cm)

Height: 3 feet (1m)

Growing requirements:

Suitable for container gardens and wicking beds, particularly in colder climates where plants may need to be moved indoors during winter. Heavy producers and varieties with larger fruit may require staking. Heavy feeder – use a nitrogen-based fertilizer. Requires high-levels of calcium – water with the dregs of a milk carton, or add crushed egg-shells to the planting hole.

5.1.4 Asian greens

Asian greens are a group of leafy green vegetables belonging mostly to the brassica family and used extensively in Asian cooking. They are fast growing, tolerant of a variety of temperatures and growing conditions, and produce prolifically. There are hundreds of different types of Asian greens; some of the most well-known include Pak Choy, Bok Choy (see image, grown in sandy soil), Wongbok, Tatsoi, Mizuna and Asian cabbage. Many of these greens can be eaten raw in salads, used in stir-fries and also used as an equivalent to spinach. They range in flavor from strong and spicy, to bitter, to surprisingly mild. Experiment with growing different varieties to see what your family enjoys the most.



Expected harvest:

For leafy varieties like Tatsoi, Bok Choy and Mizuna, you can harvest at least 1-2 leaves per plant, per day, once plants reach 5 inches (15-20cm) in size. Heading varieties such as Wongbok should be left for at least 6 weeks before the final harvest of one “head” per plant.

Propagation methods:

Sow direct in soil of a fine tilth. Cover with ¼ inch (¼ cm) of soil and keep moist. Or start in seed trays filled with seed-raising mix. Scatter seed lightly and cover with ¼ inch (¼ cm) of soil. Water lightly and regularly. Plant out when 4 true leaves have formed. Sow 5-10 seeds every 2 weeks in order to have a continuous crop.

Spacing: 6-7 inches (20cm)

Height: 7-14 inches (20-40cm)

Growing requirements:

Appropriate for container gardens. Asian greens grow particularly well in wicking-beds. Harvest greens as soon as a mature size is reached, as per variety descriptors, as older plants can become bitter and fibrous.

5.2 Summer vegetables

These vegetables need long, warm summer days in order to produce fruit. It is best to plant them as soon as soil temperatures reach 60-70°F (15-20°C), as they need a long season to reach maturity, and many must be well-established by the summer solstice as they are day-length sensitive. In cooler climates, it may be necessary to start plants indoors. In tropical and subtropical climates, the growing season may be extended from early spring to early winter.

5.2.1 *Cherry tomatoes*

Once you have a cherry tomato plant, you will never have to buy another. These plants are hardy, producing abundant crops for months, and are much easier to grow than full-size tomatoes. Invariably, a few tomatoes will escape your notice, and supply you with your next season's plants. There are many varieties of cherry tomatoes available, and almost all will fruit prolifically. Some of the tiniest tomatoes, like Wild Sweetie, are so sweet they taste like a dessert. Yellow and black cherry tomatoes add a splash of color to salads and have a great flavor also.



Expected harvest:

Up to 20 pounds (10kg) per plant. Pick tomatoes when fully-colored; they should come away from the stem easily.

Propagation methods:

Start in seedling trays or pots. Plant seeds $\frac{1}{4}$ inch ($\frac{1}{2}$ cm) deep. Cover, firm down and water well. Keep moist. Plant out when the plant has 2-4 sets of true leaves and frosts have passed. When planting out, cover stems with soil to the level of seed leaves to encourage additional root development.

Spacing: 15 inches (40cm)

Height: 3-5 feet (1-1.5m)

Growing requirements:

Appropriate for container and wicking beds. Cherry tomatoes make attractive weeping plants in hanging pots and vertical gardens. Bush varieties will require staking. Indeterminate or vining varieties grow best with cages, or a trellis. Pinch out the growing tips after the top of the cage or stake is reached to encourage bushing and fruit production. Heavy feeder – use a nitrogen-based fertilizer. Requires high-levels of calcium to set fruit – water with the dregs of a milk carton, or add crushed egg-shells to the planting hole.

5.2.2 Climbing beans

Climbing beans are easy to grow and produce for months if you pick them regularly. Bean plants are also “nitrogen-fixers”, meaning they improve the soil for subsequent crops. Varieties like Butter Beans and Green Beans are very popular, and Snake Beans produce well in more tropical areas. There are many bush bean varieties as well, but these only produce one crop of beans which ripens at the same time, and yield is not as high as with climbing beans.

Gardener's Tip:

Beans have a very hard seed coat to prevent water penetrating the seed. This means that they can take a very long time to germinate. In order to speed up germination, soak seeds overnight in cold water prior to planting, scarify seeds with sandpaper or nick shallowly with a razorblade prior to planting.



Expected harvest:

4-5 pounds (1-2kg) per plant, beginning at around 10 weeks. Pick beans when approximately 3 inches (10cm) long, before seeds have hardened and caused visible bulges in the pods. Beans harvested after this will be starchy and are better shelled and used like dried beans. Beans will continue to produce for 2-3 months as long as you pick the fruit before the seeds mature. If you allow some fruit to mature, the plant will stop producing flowers and making beans.

Propagation methods:

Plant directly into the ground, covering seeds with 1-1.5 inches (2-3cm) of (healthy) soil. Check for nutrients and pH-levels. Water well on planting and then withhold water until seedlings emerge. Sow several lots of seeds at 4-8 week intervals over the season to ensure a continuous crop.

Spacing: 3-6 inches (10-20cm)

Height: 4-8 feet (1.5-2.5m)

Growing requirements:

Appropriate for container gardens and wicking beds, although production may not be as prolific. A structure to climb is needed. Bamboo stakes are recommended for their height and because beans like to grow directly upwards. Tomato cages can also be used.

Gardener's Tip:

You don't necessarily need a special structure for beans to climb. Beans can also be grown using corn stalks, sun flowers or another tall, stalking plant, for support. This is a beneficial relationship for both plants, and beans should be planted when the stalking plant is about 1 foot (30cm) high.

5.2.3 Eggplants

Eggplants can be a little difficult to propagate and slow to get going, but once the plants begin fruiting, one or two small bushes can provide enough eggplants for the whole family, if not the whole street! As eggplants can be difficult to grow from seed, it may be good to invest in seedlings from a local nursery until you become more experienced in propagating plants. There are many varieties of eggplant available, from the traditional purple

varieties to beautifully-mottled purple and white Italian varieties like Rosa Bianca and Listada di Gandia. The finger eggplants like Little Finger, Slim Jim and other Asian varieties are easily the most prolific producers.



Expected harvest:

Up to 11 pounds (5kg) per plant, beginning at 10 weeks and lasting for up to 6-8 weeks. Pick eggplants when they are large and the stem is beginning to turn brown. Skin should still be shiny and should indent easily when gentle pressure is applied.

Propagation methods:

It is very important to start your eggplants early in the season, as plants take a long time to come to maturity and begin producing fruit. Start in seedling trays or pots. Plant seeds less than ¼ inch (¼cm) deep. Cover, firm down and water well. Keep the plants moist. Plant out when the seedling has 2-4 sets of true leaves.

Spacing: 1.5-2 feet (60cm)

Height: 3-5 feet (1-1.5m)

Growing requirements:

Suitable for container gardens and wicking beds. Heavily fruiting plants will need significant support. It is good to add a heavy stake when planting and tie branches as the plants grow. Pinching out the growing tips can also encourage bushier plants with more robust stems. Heavy feeder – use a nitrogen-based fertilizer. Requires high-levels of calcium – water with the dregs of a milk carton, or add crushed egg-shells to the planting hole.

5.3 Winter vegetables

These vegetables are described as frost-tolerant. While they will not grow where the ground is frozen solid or under snow, they can regularly survive temperatures below 32°F (0°C), heavy frosts and light snowfall. In tropical and sub-tropical climates, as well as most temperate zones, they are grown over winter but should be well-established in the garden by late autumn so that plants have developed sufficient reserves of energy to cope with colder temperatures.

5.3.1 Peas

Although shelling peas can be tedious, there is nothing tastier than home grown baby peas. Peas are surprisingly abundant, easy to grow and are nitrogen-fixers, meaning they improve the soil for subsequent crops. For traditional shelling peas, Greenfeast and Massey Gem are prolific producers, and can also be used for dried peas if you allow them to reach maturity. If you wish to avoid shelling, Snow Peas are a thin pea consumed whole; they are commonly used in Asian cooking and are bitterer than green peas. Sugar snap peas are also eaten whole, and are extra-sweet, juicy pods which make a great snack when eaten with dips.



Expected harvest:

Up to 10 ounces (300g) per plant, beginning at around 9 weeks. Pick when pods are still soft. For shelling peas, peas should be visible in the pod but not forming hard protrusions. If harvested after this, peas will be starchy and are better used as dried peas. Snow peas and Sugar snaps can be picked at any time. Peas will produce for around 1 month if fruit is regularly picked. Once fruit is allowed to reach maturity, plants will stop producing flowers and setting new fruit.

Propagation method:

Plant directly into ground, covering seeds with 1-1.5 inches (2-3cm) of (healthy and fertile) soil. Water well on planting and then withhold water until sprouts emerge. Sow seeds in lots of 10 at 3-4 week intervals in order to ensure a continuous crop.

Spacing: 3-6 inches (10-20cm)

Height: 3-5 feet (1-1.5m)

Growing requirements:

Suitable for container gardens and wicking beds, although production may not be as prolific. Peas will require support. As they climb using tendrils, pea netting is recommended. Tomato cages can also be used.

5.3.2 Kale

Kale is a green, leafy vegetable with a flavor akin to broccoli or cabbage. As it is non-heading, it is easier to grow than the latter, and is known for having very high levels of essential vitamins and minerals. There are a variety of different types of kale. Tuscan kale is the best variety for smoothies, green juices and salads, whereas other varieties like Red Russian kale can be steamed or used in soups and stir-fries. Similar growing methods to those described below can be used for collard greens, which are another winter green which used as per Red Russian kale.



Expected harvest:

At least 5 pounds (2.5kg) per plant, beginning at 5-7 weeks. You can harvest 1-2 leaves per plant, every day or so, for almost the entire growing season. Harvest the smaller, tenderer new leaves, leaving the larger, tougher ones to feed the plant.

Propagation methods:

Start in seed trays filled with seed-raising mix. Scatter seed lightly and cover with ½ inch (1cm) of soil. Water lightly and regularly. Plant out when 4 true leaves have formed. When planting seeds, consider how much kale you will eat; you will need to harvest 1-2 leaves each from 5-10 plants to get a “meal’s worth” of leaves, so you will probably need at least 5 plants, if not more.

Spacing: 1.5-2 feet (60cm)

Height: 3 feet (1m) mature height

Growing requirements:

Appropriate for container gardens and wicking-beds, but size will be limited. Plants can produce for several years, but tend to suffer severely from pests during warmer months. If you wish to keep plants through summer, it is best to leave them to the bugs and then cut them back to the stem at the beginning of autumn in order to encourage fresh growth. Growth from younger plants is usually tenderer.

5.3.3 Bunching onions

Also known as spring onions and scallions, bunching onions are a non-bulbing onion grown for their sweet stem, which can be used as an onion substitute in cooked dishes and salads, or as a garnish. Most varieties of bunching onions have dark-green strap-like leaves and a white base. However, there are also red or purple varieties available, which have the same growing characteristics as the white varieties. Leeks are larger than spring onions, with a milder flavor, and take longer to grow, but can be produced in a similar manner to bunching onions and are equally easy to grow.

Gardener's Tip:

Don't uproot the entire plant when harvesting leeks and spring onions. Instead, harvest with a clean cut about 2cm from ground level. A new onion will sprout from the base and in this way plants will go on producing indefinitely.



Expected harvest:

At least one spring onion or leek per plant. Harvest is possible from 8 weeks, depending on the size required.

Propagation methods:

Plant direct, covering with $\frac{1}{4}$ inch ($\frac{1}{2}$ cm) of soil and keeping moist. Start in seed trays filled with seed-raising mix. Scatter seed lightly and cover with $\frac{1}{4}$ inch ($\frac{1}{2}$ cm) of soil. Water lightly and regularly. Plant out when 4 true leaves have formed. Plant a large crop, or small crops regularly, for a continuous harvest.

Spacing:

3 inches (10cm) or less for bunching onions. At least 6 inches (20cm) for leeks.

Height: 7-14 inches (20-40cm)

Growing requirements:

Appropriate for container gardens and wicking-beds. Unions are extremely resilient and thus require minimal maintenance effort. Make sure they do not drown and have enough space when they grow. Harvest before wintertime.

Chapter 6: How to propagate and care for vegetable plants

While certain vegetables have particular requirements, the basic procedure for growing and caring for most vegetable plants is the same. If you can master this procedure, you will have a garden full of productive healthy plants and produce to share with your friends and family.

Caring for plants takes a lot of time and effort. From seeds to harvest is a long procedure and will be harder or easier depending on the species you attempt to grow. This chapter will guide you through some of the basic knowledge before starting to care for your plants.

6.1 Seeds versus seedlings

With the proliferation of nurseries and garden suppliers, we have the option of growing vegetables from seed ourselves or buying seedlings which are ready to plant straight into our garden. While it may seem more “authentic” to grow from seed yourself, as a beginning gardener it can be better to start with seedlings as they will be harder and more likely to produce well even if you make mistakes. Even for the most experienced gardener, there are times when it is better to buy seedlings from a commercial supplier. When choosing a nursery, look for an organic supplier with a good reputation for affordable and hardy seedlings.

When to propagate from seed yourself:	When to buy seedlings from a nursery:
<ul style="list-style-type: none">• You wish to save money• You wish to grow rare vegetable varieties not available as seedlings• You are growing vegetables which are easy to propagate from seed (radishes, beans, tomatoes) or need to be planted directly where they will grow	<ul style="list-style-type: none">• You want guaranteed crops• You don't have a sheltered space for growing seedlings• You wish to grow a vegetable that is particularly difficult to propagate (eggplant, lettuce)• Your seeds or seedlings have failed

<ul style="list-style-type: none"> • You want the ownership and satisfaction of growing from seed • You are gardening with children and want them to understand the plant life-cycle • You intend to save your own seed 	<ul style="list-style-type: none"> • You waited until too late in the season to start your seeds • You wish to get a head start at the beginning of a new growing season • You cannot water your seedlings regularly
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6.2 Propagating seeds

Some vegetables need to be planted directly where they are to be grown, as they will establish a delicate tap root as soon as they have sprouted and are easily damaged when transplanted. Other plants are fussier and should be propagated in pots in order to give them a head-start on the season, control moisture to the seed or to allow very small seeds to germinate in soil with a very fine tilth.

Plants which should be sown directly where they will grow:	Plants which should be grown in pots or trays and transplanted:
<ul style="list-style-type: none"> • Root crops (carrot, radishes, beets, parsnip, turnips) • Beans 	<ul style="list-style-type: none"> • Lettuces • Greens, including cabbages and Asian greens • Chilies and capsicums

<ul style="list-style-type: none">• Peas• Corn• Pumpkins and squashes• Cucumbers• Melons	<ul style="list-style-type: none">• Eggplants• Tomatoes• Broccoli and cauliflower• Herbs
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Whether you are planting in the garden or into a seedling tray, the same steps should be followed in order to guarantee the success of your seedlings. The following five steps will give you a good overview of the requirements.

Step 1: Sterilize equipment

Just like the babies of any species, seedlings are more susceptible to pests and diseases than mature plants. In order to avoid common diseases like damping off, which is a fungal disease that kills seedlings, it is important to use sterilized equipment. Pots, tools and any other equipment should be washed with a mixture of bleach (or another sterilizer) and water in a ratio of 1:25, then rinsed well, to ensure harmful fungi and bacteria are not passed on to the new plants.

Step 2: Ensure a fine tilth

Seeds need a loose, fine tilth (soil texture) in order to allow their tiny roots to form. The smaller the seed, the finer tilth it needs. It is for this reason that small seeds, in particular, should be started off in pots or trays, as it is easier to control soil tilth. General potting mix can be sifted to achieve a tilth suitable for small seeds such as lettuce. Even large seeds which are sown directly need well-prepared soil which has a good crumb in order to grow.

Step 3: Plant at the correct depth

Seed packages and gardening books will give a recommended depth for seeds. Different seeds germinate best at specific depths, but as a general rule, they should be covered in a layer of soil that is as deep as the widest point of the seed. So a bean seed that is a ½ inch (1cm) long should be covered by a ½ inch (1cm) layer of soil; whereas very fine seeds like lettuce do not need covering and can simply be scattered on the surface of the soil and firmed in.

Step 4: Water well

Seeds will begin to germinate or sprout once water penetrates their protective outer coating. Once this process is begun, they need a constant supply of moisture; if moisture is not available, even for a couple of hours, the seed will dry out and die. Ensuring that seeds are watered regularly and well will improve germination rates, however, the watering should be gentle, as heavy watering will displace seeds and damage delicate sprouts.

Gardener's Tip:

The larger the seed, the more susceptible it is to rotting in conditions which are too wet. When planting large seeds like beans, peas and corn, plant them deep and water them extremely well. Then do not water them again until the seedlings emerge, unless conditions are exceptionally dry and the soil sandy, in order to prevent rot.

Step 5: Ensure ideal conditions for optimal growth

In order to get the highest germination rate and the healthiest seedlings, we try to provide them with the best possible conditions:

- While seeds need constant moisture, they should never be soggy or sit in water, as this leads to disease.
- Seedlings also need sunlight. They can be started inside, but once sprouts emerge, they need a good 4-6 hours of sunlight or plants will be leggy and weak.
- Different varieties of vegetables need certain soil temperatures to germinate. Garden books and seed packages will outline these specific requirements, which are important to keep in mind when deciding whether to start certain seeds indoors or in the garden. Seeds generally need higher temperatures to sprout than the actual plant will need to grow.

6.3 Transplanting to the garden

If you have started your seeds in a seedling tray or pot, they will eventually need to be transplanted into their permanent home. Plants are ready to transplant when they have at least 2 sets (4 in total) of true leaves (as opposed to the seed leaves, which are the first two leaves of any plant and are shaped differently to the leaves of the mature plant). You don't want to transplant your seedlings when they are too small to survive, but also don't want to wait until they are so big that transplanting will damage their root systems.

If seedlings have been grown indoors or in a greenhouse, you need to gradually expose them to full sunlight in the lead up to planting out, a process known as hardening off. Plants can be hardened off by putting them in direct sunlight for longer periods each day. You can just grow the seedlings in the sun to start with, but obviously you will need to be more careful of watering and of soil temperature if you do this.

Prepare the area of the garden well before transplanting seedlings. Mulch and loosen the soil, and improve soil as detailed in Chapter 4. Prepare holes for the seedlings which are at least double the pot or punnet size, to allow for root growth, and fill the holes with water. Once the water has drained away, you can plant your seedlings. Try to plant out on an overcast day or in the afternoon, in order to prevent heat-shock.

Prepare the seedlings by watering them well; if they are in individual pots or punnets, loosen them by gently squeezing the sides of the pot and pushing up from the bottom. While most plants recover well from transplanting, remember that you want seedlings to be exposed for as little time as possible in order to limit transplant shock.

When transplanting, you need to take care that you do not damage the vascular tissue of the stem or the tap root of the plant. The best way to avoid this is by inverting pots to gently remove seedlings, and by lifting plants by the root ball or by a couple of leaves (leaves will grow back, the stem won't). If the root ball is very compacted, loosen it gently by teasing roots downwards prior to planting.

Gardener's Tip:

If there are several seedlings growing close together, remove the soil mass from the pot and hold one seedling gently by the leaves, shaking it up and down. It should come away from the others without losing too much root mass. Do this when seedlings are still small, planting them directly in the garden or into larger pots, or they will be impossible to separate.

After loosening roots, place seedling into the prepared hole, backfill with loosened soil and firm down gently. Unless you are planting tomatoes, ensure that seedlings are in the soil to the same depth as they were in the pot

in order to prevent ringbarking. Water in on planting, and maintain regular watering until plants are well-established.

6.4 Care and maintenance

In a well-prepared garden bed, vegetables can require very little maintenance. This section will discuss the main areas of vegetable garden maintenance you may wish to undertake. They are briefly mentioned as they are quite straight forward, and please use them as a simple checklist for your own garden activities.

Watering

If you do not have regular rainfall, it may be necessary to water your garden. This is more important for young plants or when plants are fruiting than at other times. To check whether your garden needs water, stick your finger into the soil to a depth of 3 inches (10cm). If the soil is damp, your garden does not need watering; if it is dry, it does. You may also wish to use mulch and organic matter in order to improve the water retention of your garden.

Fertilization

Plants which produce prolifically need plenty of nutrients to do so. Therefore, it is good to apply an organic fertilizer to your soil prior to planting, or during the growing season. Manures and composts are beneficial for most plants, a lot of nitrogen is perfect for leafy green vegetables (except broccoli and cauliflower), but can lead to poor fruit-set in plants like tomatoes and beans.

Weeding

Vegetable plants are busy making food, so they do not like to compete with weeds. Stay on top of weeding by applying a mulch, using a hoe regularly or practicing chop-and-drop. See Chapter 5 for more ideas.

Pests and disease

With most common garden diseases, the only thing you can do is remove and destroy plants which have stopped being productive. Do not be tempted to ignore diseased plants, or to compost them – if a disease spreads in your garden, it will affect your plants for years to come. If you remove diseased plants straight away, there is much less risk of this occurring. There are many varieties of vegetables which are disease resistant, which helps if you have serious problems, and you should also practice crop rotation as outlined in Chapter 7.

While pests can be frustrating, they are not as serious a problem as plant diseases. We can use Integrated Pest Management (IPM) to create a healthy garden ecosystem that will prevent most serious damage to our crops. Companion planting and crop rotation are both part of IPM and organic garden practices will also encourage beneficial insects and other creatures like frogs and birds, which prey on common garden pests and keep them in check. In the case of serious infestations, there are always organic treatment methods available. Examples are included in the list below.

Aphids and mites

Aphids are small, light green insects that suck the sap from most types of plants; mites are similar but tend to be grey or black. These insects may cause the distortion of leaves and sooty moulds on plants; aphids will be accompanied by black ants which farm them for the honeydew they produce. To treat, spray with a hard hose to remove insects, or spray the leaves of the affected plants with soapy water.

Fruit fly

Fruit flies lay their eggs in fruits and in vegetables such as capsicum and tomatoes. Vegetables will have a soft blemish on the skin where eggs have been laid, and maggots will form inside the fruit. Once eggs have been laid, there is nothing to be done but destroy the affected fruit. If you live in an area with fruit flies, soft fruits like tomatoes and capsicum should be protected with muslin or fine-net bags as soon as fruit is formed.

Caterpillars

Butterflies and moths can choose to lay their eggs on many different plants. If you see raised egg patches, destroy them by rubbing them off the leaves. Once eggs hatch, caterpillars will quickly eat through the leaves of a plant. Birds can be encouraged in your garden to control this problem, or plants can be regularly sprayed with a mixture of molasses, dish soap and water at a ratio of 1:1:1000.

Slugs and snails

Slugs and snails target green, leafy vegetables and can do a lot of damage. Bottles or jar lids filled with beer and emptied daily are effective traps, as

are grapefruit halves. Tiles and rocks can be left as tempting places to hide during the day, and turned over to allow you to kill any slugs or snails that you find beneath. Sharp barriers of sand and sawdust can protect vulnerable plants, as can diatomaceous earth, which is a natural slug-killing dust.

Gardener's Tip:

While pests can be annoying, they will rarely kill a plant. Focus on improving your soil, as pests are unlikely to cause significant damage to healthy plants. A preventative approach is much more effective than a defensive one!

Harvesting

Different plants have different harvesting methods, which can be researched individually. However, many plants are “spent” when their harvest is finished, and need to be disposed of. You can compost this green waste, or you can use it to mulch the garden where it grew. What you choose to do with spent plants depends on your gardening style and growing methods, but it is important to remember that you should replenish the soil in some way after each harvest, in order to ensure its long-term health and productivity.

Chapter 7: Crop management – Getting the most from your space

Once you have chosen a gardening style and built your garden beds, you also have to think about how to best manage the crops that you wish to grow. There are many different approaches to crop management, but they all have the same central intentions: maintaining plant and soil health over the long term, and managing the garden to achieve the best yield possible from the space available. This chapter will provide you with a basic outline of some of the crop management methods that are most appropriate for the home garden.

7.1 Crop rotation

Growing the same vegetables, or even vegetables from the same botanical family, on the same piece of land year after year can lead to a host of problems: pests and diseases are harbored in the soil and become worse with each passing year; and the crops will use the same nutrients and trace minerals each year, depleting certain elements in the soil. In order to maintain plant health and crop quality, many gardeners practice crop rotation, which means that they change the plants they put in various places each year so that plants from the same family are not grown in the same place in subsequent years. Regardless of which gardening method you choose, at least a 3 year crop rotation is necessary to ensure that you manage your space well and that your plants thrive. For gardening purposes, these are the most common botanical families you should know about:

Chenopodiaceae	Beets, turnips, silver beet, Swiss chard, spinach
Apias	Celery, carrots and parsnips, dill, fennel, coriander
Asteraceae	Lettuce, sunflowers, artichoke
Brassicacae	Broccoli, cauliflower, cabbage, Asian greens, radishes, kale
Fabaceae	Beans, broad beans, peas
Cucurbits	Pumpkin, squashes, cucumbers, melons
Solanaceae or	Tomatoes, potatoes, eggplants, chilies,

nightshades	capsicum
Alliums	Leeks, onions, garlic
Poaceae	Corn, grains, grasses

Some gardeners have written crop-rotation plans covering many years, while others simply try to remember to plant vegetables from the same family in different spots each year. No matter which approach you take, crop rotation will help prevent pests and diseases from taking hold in your garden. In the case of container gardens and wicking beds, it may not be possible to rotate crops, but soil should be replaced and containers washed out at regular intervals (at least every couple of years), which will have the same effect.

7.2 Companion planting

Like people, some plants just 'get on'. Companion plants can be seen as best friends. They strengthen and encourage each other to grow and thrive. By planting vegetables that grow well together, we can often increase our harvest and deter pests and diseases from targeting our plants. Some common companions are:

- Beans with corn or sunflowers
- Carrots/beetroot & bunching onions/leeks
- Corn, beans and pumpkin (winter squash)
- Carrots and peas
- Tomatoes and basil

Additionally, nasturtiums, marigolds and calendulas can be planted throughout vegetable gardens as companion plants which discourage harmful nematodes in the soil.

7.3 Succession planting and intercropping

Like companion planting, succession planting and intercropping involve planting several crops together with the ultimate intention of getting the highest possible yield from one area of a garden and preventing weed growth or soil loss due to run off.

In intercropping, two crops which require different nutrients or growing conditions are grown on the same piece of land. For example, cucurbits are often planted with corn; the former prevents weed growth while the latter provides the more delicate vines with shade and a structure to climb. Another example would be lettuce, which can be planted with members of the solanaceae family to grow two crops in the same space; the quick-growing lettuce prevents weed-growth and by the time the larger plants need more space, the lettuce is ready for harvesting.

Succession planting is similar to intercropping but requires plants to be grown in succession so that land is never sitting fallow and a new crop is close to harvest as soon as the old is removed. For example, a gardener might start with radishes: as the radishes reach maturity, tomato seeds are planted between them; the radishes are harvested when the tomato seedlings are about half grown; when the tomatoes start producing, a new crop is planted between them so that by the time the tomatoes are spent the next crop is ready for harvest and so on. This intensive method can deplete soil quickly, and requires a rigorous fertilization regime.

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7.4 Square-foot gardening

Like succession planting and intercropping, square-foot gardening is a method which involves using garden space intensively in order to get the highest possible yields, and requires a similar fertilization regime. In square-foot gardening, the garden is divided into a grid of squares which are thickly planted. This method makes small gardens very productive, although close plantings often make it better to harvest some plants as ‘baby vegetables’ to allow others more room to grow. The square-foot method also makes a garden more manageable, as different squares will mature at different times, so gardeners never have to refresh the whole garden at the same time.



Square foot gardening is great for people who have a limited amount of space to grow. You could even have a square foot garden within your house

if you'd like. However, you cannot expect large harvests from small amounts of plants, so keep that in mind when trying to start one yourself.

Chapter 8: Avoiding common beginner gardener mistakes

Before having mastered the art of gardening or growing your own organic vegetable garden, you will undoubtedly make some mistakes. This is perfectly fine, since even the most skilled and professional gardeners have been through the same process of making these mistakes themselves. To make errors means you are learning to become a great gardener! There are some common mistakes that occur often, and by identifying these before you even start, you already have a great head start in becoming a skilled gardener. Let's check out five of the most common mistakes that rookie gardeners make before their produce can be found on their dinner plates.

Common mistake: Over-committing

It is great to get excited about your garden, but maintaining a large garden requires a lot of time. Many beginning gardeners over-commit when building their garden and it soon becomes neglected. It is much better to start small and build as you go, than to over-commit and have to try to do everything at once. Remember, gardening is meant to be relaxing, not stressful!

Common mistake: Under watering

When watering your garden, check regularly using the test outlined in Chapter 5 to see how much water it really needs. Plants need regular, deep

watering to encourage good root development; many beginning gardeners water every day, but they don't do it for long enough, so the water does not penetrate the soil very deeply. Then they wonder why their plants still wilt on hot days! It often takes what feels like a very long time for water to penetrate the first 3-4 inches (10-15cm) of soil, but it is better to spend the time watering deeply every couple of days than to just sprinkle plants every day as many beginning gardeners do.

Common mistake: Not staying on top of the weeds

It is easy to ignore weeds when they are little sprouts, and so much smaller than our plants. But if we do, they will soon be big enough to compete with our vegetables and cause problems. It is really easy to pull weeds when they have just sprouted, or to run a cultivator or hoe between our plants.

Removing fully-grown weeds is much harder work and more disturbing for the plants around them. If the weeds get really out of control and manage to set seed, you have created a problem which will keep you busy with weed-sprouts for several years. Stay on top of the weeds in the first few years, and by year 3, your garden will be almost weed-free. It's worth it, believe me!

Common mistake: Not washing vegetables

The food that we grow in our organic, home gardens is certainly of a higher quality than that we can buy. Recent health scares, such as greens contaminated with salmonella, have highlighted just how important it is that we know where our food comes from and how it is processed. However, knowing that you've grown something yourself is not enough to make it safe; homegrown vegetables can also be contaminated with harmful

bacteria, yet many gardeners fail to wash their produce. I cannot emphasize how important it is that you wash your vegetables well; soil may contain harmful bacteria, and slugs and snails can pass on liver flukes and other unpleasant nematodes in their slimy trails. Homegrown vegetables are definitely healthier than those from the supermarket; keep it that way by washing them well if you plan to eat them raw!

Common mistake: Exposing the soil

Many beginning gardeners have a vision in their mind of mounds of dark earth between rows of green vegetables. While this is a nice picture, soil scientists have now demonstrated that exposing the soil to the elements in this way is about the worst thing we can do for nutrient retention, water retention, temperature regulation, preventing run-off, soil compaction, and even for microbiological diversity. It is actually better to have a bed of weeds than empty soil. We can't always have productive beds, but we can use mulch and cover crops to protect our soil when it isn't being cultivated, and doing this will make a significant difference to the long-term productivity of our garden.

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