Homegrown Sabzi
Urban Farming for Absolute Beginners

by

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Urban kitchen gardening – sometimes referred to as ‘urban farming’ – is the growing of edible plants in and around the city.

Farmers working in and around urban areas, or ‘urban farmers’, usually grow vegetables, herbs and sometimes fruit trees in their kitchen gardens, whereas crops like rice, wheat and millets are not usually grown in these gardens.

Growing food in the city presents a unique set of challenges.

In order to tackle these challenges, urban farming usually involves a number of creative and jugaad strategies along with low-cost innovation to create spaces in which kitchen gardens can thrive despite all the concrete, pollution and hustle-bustle of the city.

This is what we at Edible Routes have been doing for the last four years in and around Delhi. We are an organisation that empowers people to grow food and reconnect to nature.

We do this by conducting workshops and teaching people; and by designing, making and maintaining kitchen gardens.

And renting out little plots of land called farmlets for urbanites to experience the growing process.

We always try to find low-cost solutions that are easy to implement, as you'll see through the examples in this book.

How to farm in an Urban Landscape

What exactly do we do when we practise urban farming?

At a rudimentary level, urban farming is the endless cycle of preparing soil, sowing, transplanting, weeding, tending, pruning, harvesting, clearing old plants and starting all over again.

But for so called ‘urban farmers’ there’s more to this process, it's also a way to reconnect with nature.

One of our teachers always says that gardening is not about growing plants, it is a mode of observation – Observe, Observe, Observe!
The more attention we pay to the plants around us, the better the relationship we’ll develop with nature and the better the gardeners we’ll become.

We can therefore say that urban farmers not only grow plants, but also observe, enjoy and cherish nature more while living in soilless brick-mortar-and-plastic environments.

Looking at the way our cities are built, at first it appears almost impossible to integrate the growing of plants into these densely built-up concrete spaces. But if we look more closely, small unlikely, spaces like balconies and rooftops, sun-lit walls, backyards and sidewalks offer infinite possibilities to grow what we eat.

Traditionally in rural India, seeds, grazing land, and knowledge were considered part of the commons – everyone would share these resources for free.

People residing in cities have just started growing vegetables – they neither have any farming knowledge to share nor a sense of community.

Thus, a very large and important part of urban farming is mobilising friends and other locals to get involved in gardening and related activities like composting.

We need to create and re-discover a tight-knit sense of community through our gardens.

Doing so, we might realise that our domestic help is a farmer and knows all about the right planting season or that the senior citizen next door goes back to his village once a year and can bring us seeds from his brother’s farm.

In this way, urban farming is also a way to create a sense of community and escape our isolated existence in the city.

Why Urban Kitchen Gardening?

Many people get into urban farming due to health concerns: given the uncontrolled use of harmful chemicals in growing most of the food we eat, it provides city-dwellers a way to become at least partially independent of synthetically grown vegetables.
Additionally, urban farming presents the following advantages:

1. **Nutrient density:** Nutrient density is the content of vitamins and minerals per calorie of food.

When a vegetable is harvested it loses half its nutritional content within the first twenty-four hours. Hence, a tomato plucked yesterday will only be half as nutrient-dense when eaten today.

This means that a tomato plucked yesterday will still contain as many calories today, but half its nutrients will have perished.

As a result, most of the vegetables we eat – which usually take 4-5 days to reach us – are simply empty calories, devoid of beneficial minerals and vitamins.

**Urban farming can provide fresh, nutrient-rich vegetables to growers.**

2. **Safety/ chemical free:** These days we often hear stories of farmers who maintain a separate chemical-free patch of land to grow vegetables for self-consumption and sell the chemically grown produce in the market.

These farmers are disconnected from the city people who eat this produce.

Most urban dwellers are not aware of the source of their food: they do not know where, how and by whom their food is being grown.

**Urban farming can at least partly provide a medium through which people in urban spaces can access safely grown food.**

3. **Cost cutting/savings:** Conventionally grown vegetables use expensive chemical fertilizers and have high transportation costs.

Urban farming can help cut transportation as well as chemical input costs since the means of production are brought into the city.

4. **Finding community:** There seems to be a growing sense of alienation amongst city people.

Sometimes we aren’t even acquainted with our immediate neighbours.

Gardening is a great tool to bring people together and form a sense of community.

**The best part, post-harvest, is to cook and share the freshly grown produce together.**

And last but not least, urban gardening is simply fun, will make your home more beautiful and will give you a sense of satisfaction and accomplishment that few things can give you in life.
Before we begin, let’s talk about the underlying principles that guide our kitchen gardening practice.

Conventional agriculture comes at the price of forest degradation.

Entire forests are mowed down to create space for human needs, a large part of which is for the food we obtain through agriculture.

But ironically, forests are far more productive and resilient as ecosystems than crop fields.

They provide shelter and nutrition to most species of animals, including human beings.

For this reason, our aim is to learn from forest systems in order to make our kitchen gardens more eco-friendly and efficient in production.

We try to work with nature, not against it, and follow the patterns and processes observed in forests.

Throughout this book, we will be using lessons gleaned from forest ecosystems to design and run earth-friendly gardens.

We have also learnt a number of lessons from our work in the ‘urban jungle’.

Forgive us if we repeat these principles in every chapter, but we are very keen you absorb them completely:

1. Value the soil: Any kind of cultivation depends primarily on the life within the soil – earthworms, insects, microbes, fungi, etc.

   This ‘living soil’ is the basis of any kind of gardening practice.

   Unfortunately, a large part of the soil in our country has been degraded due to deforestation, pollution, and irresponsible agricultural practices.

   We think of the earth as a ‘resource’ we can extract from ad infinitum, but this needs to change.

   As gardeners, our job is to bring life back to the soil and to protect soil organisms.
2. Create biodiversity: Forests are the most diverse and abundant ecosystems on the planet. Nobody goes hungry in them.

They are also rarely monocultural, as in, lots of different species of plants, trees and animals live together in forests.

It has been observed that plants grow much better in groups or communities. This produces symbiosis, i.e., mutually beneficial relationships. We must try to harness this as much as possible to keep our gardens diverse and free from a monoculture mindset.

3. Mulch! Mulch! Mulch!: Observe the forest floor.

You will notice a thick layer of leaves covering and protecting the soil on every square inch of space.

At any time of the year if you put a fistful of this soil next to your nose you will feel the sweet smell of the rain.

Mulching is nature’s way of providing shelter to the insects, worms and microorganisms that are crucial to keep soil – and all plants, and animals and human beings – alive.

Mulching is simply placing dry leaves back on the soil. As straightforward as this sounds, it is also probably one of the most difficult things to convince your maali or Residential Welfare Association (RWA) to start doing.

Go ahead, try it, and make sure you don’t give up since it’s also one of the most important things you can do for the environment.

4. Make mistakes (but make sure you learn from them!): This is a very important principle we’ve gleaned from our work in the ‘urban jungle’.

We are probably some of the first human beings in history to try and grow vegetables in plastic containers on the balcony of a high-rise apartment.
This has not been attempted ever before; so don’t worry if at first you don’t succeed, make a mistake!

But try your best to only make ‘successful’ mistakes. A successful mistake is one that teaches you a lesson. Successful mistakes can be corrected the next season and add to our local knowledge.

Making successful mistakes demands that we observe very carefully and try to draw links between our actions and results.

Only by making lots of ‘good’ mistakes can we develop a sound local gardening practice.

5. Be Practical: At heart, we care a lot about the environment. We wish to see people and nature living in harmony once again, but we try not to be unbending or inflexible in our environmentalism.

Our primary aim is to transform people’s mindsets through kitchen gardening. Sometimes clients insist on using products that may not be environment friendly: plastic gamlas, for example.

In a case like this, we don’t discourage them from gardening, but point them towards more eco-friendly materials.

Our idea is that over time, the client will themselves shift to a more eco-friendly container, but what’s important is that they start gardening in the meantime.

That’s it! These are our primary guiding principles. In some sense, these principles draw the lines within which we make and run gardens.

But also remember, and this is possibly the biggest lesson we’ve learnt from the forest: there are no straight lines in nature.

Nature is full of curves and circles and zig-zags and spirals, but no straight lines.
So don’t worry if you – or we – bend or break some of these principles sometimes, as long as this is done within reasonable limits.

**A note on the real reason we are doing all of this anyway**

Yes, we’ve said that kitchen gardening helps us

a. To eat tastier, fresher, healthier food,

b. Reconnect with the rhythms of nature once again,

c. Avoid pesticides and rebuild our community,

d. To reduce the amount of waste we send to the landfill every day.

But, apart from all this, the real reason we’d like you to start a kitchen garden is that through this practice you will develop empathy for our mainstream farmers.

By growing something, even a handful of spinach, you will understand the difficulty of producing food and hopefully do something to benefit Indian farmers and agriculture.

If we, through this book, and through your gardening, create in you even a little bit of empathy for the Indian farmer, we will consider our endeavour a success.
Once you’ve decided to become an urban farmer, you will have to assess your space and make the right choices about where to grow your plants and in what kinds of beds or containers.

2.1 Spacing and orientation: Follow the sun!

As farmers in the middle of an urban jungle we face two problems:

- Lack of space
- Shortage of sunlight

There are houses in Delhi that receive very little direct sunlight. Sometimes, we’ve had to inform clients that they will be unable to grow certain fruiting vegetables like brinjal or tomato due to a lack of direct sunlight.

Most people in Delhi – and other cities – live in apartments or small, closely-built houses that only have balconies or rooftop spaces to access the outdoors and grow plants.

Although both these issues – lack of space and sunlight – place limitations on what urban farmers can produce, we can still manage to grow at least some edibles if we understand how the sun behaves and how to design our garden based on your home’s orientation.
2.2 Duration of sunlight

One of the harsh truths of urban farming is that you will need at least 3-4 hours of direct sunlight to grow anything edible. Ambient light will simply not do. In an ideal world, you’d receive around 7-8 hours of sunlight to grow most of the commonly eaten vegetables.

Once you’ve calculated which parts of your space receive the maximum sunlight, you will be able to deduce which vegetables you can grow and where. The list above can guide you with that.

2.3 Orientation: learning to track the sun

Now let’s also understand how the arc of the sun changes with each season. In the **summer**, the sun travels in a semi-circular arc almost perpendicularly above us. It rises in the east, moves ninety degrees by the afternoon to a point almost directly above us and then moves a further ninety degrees to the western horizon by the evening.

On the longest day of the year, the summer solstice, which usually happens between the twentieth and twenty-second of June, the sun makes an arc so large that it results in around fourteen hours of daylight time in India.

After the summer solstice, the length of each day shortens as the arc of the sun begins to tilt towards the south. Since we live in the northern hemisphere this is how it is. The sun’s path begins to shift south as shown in the diagram.

The following is a list of how much sunlight different kinds of vegetables and herbs need:

- Herbs like basil and thyme: 2-4 hours
- Leafy greens like spinach, *methi* (fenugreek) and *chaulai* (amaranth): at least 4 hours
- Root vegetables like carrots, radishes: 4-6 hours
- Fruiting vegetables like tomatoes and brinjal: 6-8 hours

The best way to assess how much sunlight you receive is by stepping out onto your rooftop or balcony several times in a day and simply observing which areas receive direct sunlight and for how long.
On the shortest day of the year, the winter solstice, which occurs between the twentieth and twenty-third of December, the sun’s arc becomes so short that we only receive about ten hours of sunlight.

Following the winter solstice, the sun’s path begins to shift back towards the north and the days become longer once again.

What all of this means for us urban farmers is that if the orientation of your garden is:

- **South-facing:** This is ideal. You will receive enough sunlight through both winter and summer months. If the eastern side of your garden is exposed to the sun as well, you will receive the maximum amount of sunlight possible through the year.
- **East-facing:** You will receive ample sunlight the entire year to grow vegetables. If the southern side of your garden is blocked there may be a slight shortage in the winter.
- **West-facing:** You will be able to grow most plants, although, productivity may be a little less. Plants, like humans, don’t like the afternoon sun and are less efficient since the sun becomes harsher after midday.
- **North-facing:** You should be able to grow some herbs in the summer but you will not receive any direct sunlight in the winter.

So make sure you don’t keep any of your edibles in your north-facing balconies.

> A single-reach bed along a railing. Notice its width is approximately 2 feet.

- It’s very important to first understand how much sunlight your space is receiving.
  
  Once we understand this, we can move on to designing the garden.

### 2.4 Laying out pathways and growing spaces:

Understanding orientation and the sun’s arc may have felt like rocket science to some, but don’t worry, this section is much easier.

You now know on which side of your terrace, which balcony or which corner of your garden you want to start gardening. For the next step in your design, we only have one very strict principle to follow: **No stepping on the veggie growing spaces!**

In other words, we do not place our feet, hands, heads or buttocks on the spaces in which we grow vegetables, i.e., the growing spaces or vegetable beds. In fact, we do not place anything heavy on the beds.

This is to ensure that we avoid compaction (Please refer to Chapter 3. The Ground Beneath our feet).
**Compaction** is the compression, the hardening, of soil. Compaction reduces the space for water and subsoil organisms and creates many problems for plant roots, so we try to avoid it at all costs.

We achieve this by dividing our space into two different sections:
- Growing spaces or beds
- Walking paths

We must ensure that every point on a growing space is easily accessible from the nearest point on a walking path.

That is to say that every inch of a bed must easily be within human reach. This dictates the maximum width of our growing areas: comfortable human reach is approximately two feet. So, every point on a growing space must be no more than two feet from the nearest point on a walking path.

In essence, this means that a growing space can be no more than two feet wide if it is accessible from only one side; and no more than four feet wide if it is accessible from both sides.

Given these limitations in our design, one very efficient design pattern is the keyhole. Keyholes help minimise walking paths and maximise your growing spaces by creating a pattern that resembles ‘teeth’, in some sense.

![Double-reach beds – beds that are accessible from both sides – can be approximately 4 feet wide.](image1)

![A keyhole design pattern maximises space utilisation.](image2)

![Utilising rooftop space efficiently using the design principles mentioned above](image3)
Once you understand this, you can take a paper and pencil or use chalk on your terrace, or visualise in whichever way works best for you, and start drawing where you want to have your growing spaces and where you want your pathways.

For your garden to be a success in the long run, also keep in mind a few additional things:

- Ensure you don’t block any water points or hinder the accessibility to water tanks.
- Don’t place your container right next to a plug point, fuse box or other electrical implements.
- Don’t block any drains with your pots and containers.
- If you are cramped for space, it’s okay to reduce your walking path to 1.5 feet. But walking paths should never be less than this width.
- Keep some space open for recreational activities like get-togethers and to read the newspaper amongst your plants.

Try to account for how your space is used by different individuals throughout the year. Usage patterns may vary in different seasons.

For example, individuals from your family or organisation may spend more recreational time in this space during the winter, in which case, you may need to reduce the amount of space used for growing vegetables. You or your neighbours might need to dry clothes on the rooftop.

Consult all persons who use the space before executing your design in order to avoid conflicts later on.

If there are very large trees obscuring the sun from your space, try to get permission from your local municipal body to do ‘chhataee’ or prune some of the branches.

2.5 Choice of container or raised beds: finding the right home for your plants.

Now that you know where you want to create your garden, you will have to make a choice regarding which
containers will be best suited to grow your plants in.

For this, many options exist depending on whether you have access to the ground or not.

1. For those with access to the ground

If you’re one of those few urban farmers who can use the ground for your kitchen garden, you’re very lucky.

You will be able to grow your plants directly in the earth, giving them much more root space, a better microclimate and access to more nutrients.

We follow the same principle mentioned earlier on the ground as well: no stepping on the growing spaces. To ensure this happens and to maintain better soil health, we recommend **raised beds** for growing our vegetables.

Raised beds are vegetable beds that are elevated from the ground level by about 4-6 inches.

These slightly elevated beds ensure that the soil doesn’t get compacted, remains porous and maintains an appropriate texture for plant roots and sub-soil organisms to thrive. Of course, our previous rule still strictly applies: no stepping on the beds!

The easiest way to make raised beds is to dig 2-3 inches deep into your walking paths and then to put this loosened soil onto your growing space.

This will automatically give you a raised height of approximately 4-6 inches on your growing space.

In the monsoon, it’s quite likely that these beds will get damaged by the rain.

This will need repair work. Raised beds can also be made ‘permanent’, as in they can be given support with bricks or tiles or even planks of wood to prevent any damage from happening in the monsoon.

Keep in mind, no cement needs to be used here; the bricks and tiles will be held up by their weight and a little support from the soil.

A raised bed system with walking paths on both sides and 4-foot wide beds
2. For those without access to the ground, i.e., those who have to use containers:

If you don’t have access to the ground, or, if you’re planning to grow in a balcony or rooftop, you will need to choose which containers to grow in.

Here, three main points should be considered:

A. Container depth
B. Container material
C. Container surface area

A. Container depth:

Container choice depends on what you’d like to grow, since different plants require different depths:

❖ Micro-greens: 2-3 inches.
❖ Greens like spinach, methi (fenugreek), chaulai (amaranth), kulfa (pigweed), sarson (mustard): 4-6 inches is minimum (8 inches is ideal)
❖ Short root vegetables like pink radish, orange carrots, beetroot, turnip: 4 -6 inches is minimum (8 inches is ideal)
❖ Fruiting vegetables like French beans, chillies, capsicum: 8-10 inches is minimum and (12 inches is ideal)
❖ Tall fruiting plants like ladyfinger that have deeper roots: 14 inches is ideal
❖ Fruiting vegetables like tomato and brinjal: 10 inches is minimum (12-14 inches is ideal)
❖ Climbers like cucumber, kakdi (Armenian cucumber), karela (bittergourd), lobia (black-eyed pea): 10 inches is minimum (12-14 inches is ideal)
❖ Heavy - feeding climbers like tori (ridge gourd): 12-14 inches is minimum (18 inches is ideal)
❖ Sprawling, heavy-feeding creepers like lauki (bottle gourd) and kaddu (pumpkin) : 18-24 inches depth.

**IMPORTANT:**

Keep in mind that the orientation of your beds should be from east to west. This will ensure that regardless of the season, your plants receive an equal amount of sunlight.
Clay and terracotta pots are a good option for indoor plants and fruiting vegetables like brinjal and tomato

High-quality/virgin plastic: This material is light and can last up to five years, if not longer. This can be a good option, although, it may not be aesthetically pleasing.

Plastic can also result in problems of aeration and porosity for the soil, especially in the monsoon.

Brinjal growing in a 10-inch deep bamboo basket

(Don’t forget that these plants will require more surface area to crawl around their containers!)

Fruit trees should be grown in containers at least 2.5 feet deep and with a diameter of 2 feet-3 feet.

B. Container material:

Once you’ve decided on the depth of your containers, you'll need to decide which material to use. Each material has its own pros and cons.

Depending on your specific situation you can decide what works best for you:

- Clay/terracotta containers: These provide good porosity and look better than plastic but can be heavy to carry around.

  Clay pots can sometimes also result in aeration issues for the soil. Such containers usually last between 3-5 years, depending on the quality purchased.

- Cement containers: These containers last longer than terracotta but are even heavier and do not provide the same porosity as clay.

  Virgin plastic planters are your best option for light, long-lasting containers.
Don’t use these if you are planning to shift plants around. Aeration for the soil can also be a problem in cement. These containers have the advantage that they can last up to ten years and more.

- **Recycled fruit trays:** These trays are easily available at most kabaadis (scrap dealers) and are a great option for your garden. They are good for aeration and porosity and provide a large surface area.

- **Bamboo baskets:** These are an excellent and aesthetic choice that provide good aeration as well as porosity. The baskets will need to be lined with a geo-textile fabric to hold the soil in place. Each basket can last between 1.5-2 years.

- **Fruit crates:** Fruit crates are an excellent option to grow greens. The only hiccup with fruit trays is that they might not be as durable and need a lining to hold the soil inside. Please refer to **Options for lining your containers**.

- **Bamboo boxes:** Such boxes are a wonderful choice from an aesthetic point of view as well as for aeration and porosity. Lining is required.

**C. Container surface area**

Your container’s surface area will determine which plants you can grow efficiently:

- Greens and root vegetables, anything you plant densely, require large surface areas.
Options for lining your containers:

• UV-treated geo-textile: This is a polymer fabric that holds soil in place and does not disintegrate in direct sunlight or in water. It lasts up to ten years or more.
• Plastic sheet/tarpaulin pieces: This can hold soil in place but usually results in major problems of aeration and porosity. Water has a difficult time leaving containers lined with plastic. Plastics also disintegrate within a few years and you will have to change the lining.
• Jute and other non-polymer cloth: This is the most eco-friendly option but usually does not last beyond two seasons.

So, generally speaking, circular gamlas are not your best option to grow greens like spinach, methi and amaranth. Long planters, boxes and crates are much better for this.

❖ Shrubs and herbs are equally happy in gamlas or planters.
❖ Vines and creepers require depth but can be planted in containers with relatively small surface area as well.

You’re almost ready to start planting!

Place your containers where you have decided to put them, make the raised beds according to your design layout and now get our hands in the mitti!
Traditionally, our farmers removed their footwear before walking onto their fields.

Soil was revered and respected, along with countless other deities of nature. Indian cities seem to have forgotten this.

Every urban farmer’s first responsibility is to nurture and protect soil.

The reason is simple – soil is the medium in which plants grow; healthy soil will automatically result in healthy plants. Soil is the bridge that enables trees and plants to re-absorb decomposing organic matter.

In some sense, soil links death to life. Dead and decaying plant and animal matter fall on the forest floor, come in contact with the soil, decompose, and then get absorbed as nutrition by the roots of trees and plants.

You’ll be surprised to know that the weight of worms, insects and other sub-soil fauna living beneath our feet is several times higher than the weight of humans, animals, plants and trees above the soil.

It’s these sub-soil organisms that first decompose dead organic matter and then re-compose it into nutritional factors that can be absorbed by plants.

Soil is a vast and fascinating subject whose secrets we’re only now beginning to understand.

Approximately only around 3.2% of the Earth’s surface can support human life. And only the top soil – 3 - 4 inches of this small section – has the potential to give life to plants and animals.

Nature, by itself, takes approximately 250 years to produce one inch of top soil. Now imagine the urgency with which we need to protect and nurture soil!

It’s said that the longevity of a civilization depends on how well it nurtures its soils.

3.1 Understanding your soil

We will now talk about two critical aspects of soil:

1. Soil structure (or tilth) refers to two things:
- The size of soil clumps that stick together
- The amount of cracks, gaps or tunnels that exist between these soil clumps

A healthy soil structure is fluffy and porous, i.e., water and air easily pass through.

This is guaranteed in nature if we have a high organic content (grass, leaves, compost, mulch, wood, etc.) and a thriving soil life (earthworms, insects, millipedes, microbial life, etc.).

### 2. Nutrient content

- Nutrients that plants require are available in soils in different quantities
- Nutrients also exist in different forms, some of which might be accessible to plants, while other forms are not

A nutrient-rich soil exists usually where organic content is high. Soil life transforms nutrients into forms that plant roots can take up.

Therefore, a healthy soil structure and healthy nutrition of plants usually go hand in hand.

### 3. PH factor:

The PH expresses the acidity or alkalinity of soil. The ideal pH for growing vegetables is 6.5 - 7.5.

For our purpose as urban farmers, we will primarily talk about soil structure (tilth) and nutrition; pH can become a little too technical. The ideal soil for any plant is porous and nutrient rich. It should be crumbly to the touch. The technical term for this is ‘friable’.

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Did you know that about half the volume of a healthy soil is just air!

It’s all the space created by worms and other subsoil organisms to live in.

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Fun fact:
The human body maintains its pH strictly between 7.45 and 7.55.
Plant roots require spaces and cavities between soil particles to spread between these particles so that plants can grow.

Soil organisms move through soil material and create space for roots to spread. These same organisms also decompose and then re-compose organic matter into nutritional factors that roots can absorb.

Thus, for any successful gardening practice, it is our responsibility to protect and nurture organisms in the soil.

Remember that in the ground, earthworms, insects and other sub-soil fauna constantly ‘drill’ and churn the earth to ensure it remains soft, crumbly and friable – the ideal environment for roots to spread and grow.

Plus, in the ground, roots have ample room to search for nutrients.

What an aquarium is to a fish, a pot is to a plant. The space for the plant to thrive is limited. Hence, we need to take extra care to maintain an appropriate environment for it.

In containers, we come upon two major limitations when it comes to soil quality:

a. Compaction: This is when the soil becomes hard because there are no worms or other sub-soil fauna to carry out nature’s own form of ‘gudaai’ (loosening or fluffing up soil).

b. Lack of nutrients: This is simply due to the lack of space for roots to spread and find nutrients.

For these two reasons, we need to create a potting mix:

![Walking paths mulched between the raised beds of a vegetable patch. Ensure your pathways are mulched with at least a 3-4 inch thick layer of mulch.](image)

![Appropriately mulched gobi plants.](image)

3.2. Managing Soils in a Container Garden

Now let’s see how we can apply some of these lessons to our small, urban kitchen gardens.

Sometimes, people get frustrated while trying to grow vegetables in pots of hard, dry, cracked soil. It’s important to understand how this can be avoided.
A potting mix is a combination of natural materials that attempts to recreate some of the soil conditions that exist naturally in the ground. Our objective is to overcome problems of compaction and lack of nutrients.

An ideal potting mix should be light, airy, long-lasting, moisture-retentive and contain diverse nutrients.

Here are the characteristics of soil that we need to pay attention to:

- **Drainage** – to ensure water passes easily through the mix and doesn’t clog plant roots.
- **Aeration** – to make air available to the roots. Roots require oxygen to carry out their functions effectively.
- **Water retention** – to avoid excessive watering and maintain moisture levels.

- **Nutrients** – to provide nourishment to plants so that they can flower and fruit successfully.
- **Anchorage** – to allow the plants to stand with stability.
- **Microbes and worms** – to do the crucial work of re-composing organic waste and manure into forms that our plants can absorb.

Making potting mix is like cooking. There are many ingredients that can be added in a variety of proportions.

Here are some of the ingredients and their uses:

- **Cocopeat**: Made from powdered coconut husk, this inert medium has excellent water-holding capacity. It is added to your mix so that moisture is retained.
  
  In addition, it is light, which helps keep the soil, crumbly and well-aerated. It is available either online or in most nurseries for Rs. 200/- a block.

  (Note: Cocopeat will need to be soaked in water and expanded before use.)

- **Soil**: In a potting mix the role of soil is to provide your plants anchorage – something the roots can hold onto and grip.

  It also contains slow-releasing nutrients. Soil should be available locally at almost no cost.

- **Sand**: Adding sand helps with drainage. It helps water pass through your mix easily and makes your potting mix more porous.
Compost: This provides the nutrient element of the mix. You can use either gobar khaad (dried cow-dung), vermicompost, home-made compost, leaf compost, or – best of all – use a variety of different composts.

Plants, like us, love variety in their food too. This should cost you between Rs. 5-15/- a kilo, depending on the quality.

Vermiculite: Vermiculite is a naturally occurring mineral that is mined and processed into lightweight granules with many layers. Minute cavities in each granule create root space and help hold nutrients. You don’t necessarily need vermiculite, but it sure does help. Specialised nurseries stock vermiculite or you can order it online at about Rs. 50-80/- a kilo.

Neem khalı: ‘Neem khalı’ is what remains after oil has been extracted from neem seeds.

This is an organic fertilizer but at the same time it also acts as a fungicide, pesticide and protects plants from ants and parasitic nematodes. This costs around Rs. 10-20/- per kilo.

Every ingredient of the potting mix has multiple functions and works together to make a better growing medium.

Now that you have your ingredients, let’s try a few recipes. The percentages mentioned below represent the total volume (not weight) of each ingredient.

These are basic guiding principles.

To get your potting mix right you’ll need to experiment with local soils and specific plants to see what works best in your area.

---

**Different recipes for potting mix**

<table>
<thead>
<tr>
<th>Premium potting mix</th>
<th>High-quality potting mix</th>
<th>Budget potting mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% Cocopeat</td>
<td>34% Compost Mixture</td>
<td>34% Compost Mixture</td>
</tr>
<tr>
<td>15% Neem Khali</td>
<td>33% Cocopeat</td>
<td>33% Sand</td>
</tr>
<tr>
<td>5% Vermiculite</td>
<td>33% Soil</td>
<td>33% Soil</td>
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</tbody>
</table>

Once you get your potting mix right, you’re well on your way to a successful garden.
3.3 The Ground above Our Feet: Raised beds

If you’re one of those lucky urban farmers who has access to the ground, you need to keep in mind that we cannot change or alter our soils. We can only amend some of its properties. For example, we can improve drainage to some extent by making raised beds (as explained in the previous chapter 2. Garden Design Techniques).

The primary property we should try to amend, however, is the amount of organic matter available in the soil. Organic matter not only improves the soil structure, it also attracts soil life. Therefore, there are no ‘good’ or ‘bad’ soils; soils can only be living or non-living. The soil's fertility – its ability to produce life – is directly proportional to the life within that soil.

Walk into a forest and you will tangibly notice life thriving under the forest floor.

Here are some easy tips for you to improve your soil quality in a low-cost way:

- Insist on using raised beds (see our chapter 2. Garden design techniques)
- Add organic matter like farmyard manure or vermicompost
- Plant green manure crops like dhaincha (Sesbania bispinosa), alfa alfa and sunhemp as living mulch
- Add available leaf litter in the form of mulch to your walking paths and on your beds.

3.4 Mulching - a must for both containers and beds

Let’s focus for a moment on mulching. As mentioned in our introduction, mulching is placing a layer of dry organic matter over the soil, for example, dry leaves, wood shavings, or wheat husk. This mulch forms a protective skin on the soil.

Mulch is what we observe on the forest floor. It helps retain moisture and keeps soil life protected from direct sunlight.

This moisture and darkness creates an ideal environment for soil organisms to thrive.

This protective layer of leaves is essential for any kind of gardening, whether in containers or directly on the ground.

You can choose either dry mulch or green/living mulch. Dry mulch includes all dry/dead/brown biomass like leaves, wood shavings, cocopeat, crop residues, etc.

And green or living mulch is a layer of green-cover planted specifically to enrich the soil.

For example: alfa alfa, stylo, dhaincha (Sesbania bispinosa), sunhemp or horse gram.

We must always keep our pots and growing spaces mulched.
Not only will this help with maintaining a healthier soil, it'll also reduce the amount of water we use to grow our plants. No wonder some of our urban farmers sign off their emails with “Mulch, mulch, mulch!”
A wise man once asked his son to split open the fig of a banyan tree. The son split open the fig and showed his father that there were seeds inside.

Then the wise man asked him to split open a seed. The son split the seed and said to his father that he’d found “nothing”.

The wise man replied that within this “nothingness” lay the potential for a tree, a forest, and for all of life.

Whatever this story means, the real questions is:

4.1 To sow or not to sow?

New kitchen gardeners often find the process of sowing difficult.

How many seeds do I need to plant in a given space?

How do we even begin to answer this question?

The first answer is to observe the stages of a plant’s growth.

While sowing, we need to picture, in our mind, the fully grown plant. In order to do so, observe whether a plant grows into a bush, like brinjal or chilly; or vines upwards like karela (bitter gourd); or sprawls along the floor like lauki (bottle gourd); or grows downward into the soil like carrot and radish; or soars into the sky like a moringa tree – the possibilities are endless.

All we need to do is acquaint ourselves with the plants we want to grow. So, go out, and start observing!

Once we are acquainted with our plants, we can easily decide how much ‘living room’ they need. On this basis, we can understand how much space to leave between seeds.

Picture a tilled plot of land, 1-acre in size, and a farmer broadcasting seeds as he walks in a carefully calculated pattern.

After generations of working in agriculture, farmers have an intuitive sense, an estimate, of how many seeds to plant for optimal production.

Unfortunately we wannabe farmers don’t have this sense yet.

To begin to develop this sense, we will use a simple technique called ‘square-foot gardening’. Luckily for us urban farmers, we have to deal with relatively smaller spaces.
The diagram gives you the figures for some of the most common vegetables.

**EdibleRoutes SquareFoot Garden planner**

<table>
<thead>
<tr>
<th>8 Peas</th>
<th>Bush beans</th>
<th>Pole beans</th>
<th>2 Cucumbers</th>
<th>1 Tomato</th>
<th>1 Pepper</th>
<th>1 Eggplant</th>
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<tbody>
<tr>
<td>orange</td>
<td>9 Carrots</td>
<td>6 Beets</td>
<td>16 Raddish</td>
<td>6 Turnips</td>
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<td>4 Swiss chard</td>
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<td>4 Basil</td>
<td>4 Parsley</td>
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<td>16 Dill</td>
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<tr>
<td>9 Chives</td>
<td>6 Raddish</td>
<td>9 Onions</td>
<td>4 Garlic</td>
<td>4 Leeks</td>
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<td>2 Semphali</td>
<td>2 Lobia</td>
<td>4 Gvarphali</td>
<td>4 Kalmi</td>
<td>2 Poi Saag</td>
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Zucchini, Summer Squash 2 sqf/plant
Pumpkin, Summer Squash 2 sqf/plant
Melons 2 sqf/plant
2 Tinda
Even those small spaces can be further broken down into one-square-foot grids and planting can be planned based on how many seeds we'll need to sow per square foot.

Take an example: A brinjal plant comfortably occupies enough space to cover approximately 1-square-foot. So we plant one brinjal seed per square foot (What this amounts to is that you'll need about 1 brinjal plant per standard size gamla (with 12-inch depth)). On the other hand, approximately six beetroot can grow in one square foot.

Thus, we'd plant six evenly spaced beetroot seeds in one square-foot in a pattern that resembles the six on a dice.

Once you understand how many seeds per square-foot to sow, you can replicate this pattern on the rest of your growing area.

For example, if you have a ten-square-foot bed, you'll need to plant around 60 beetroot seeds in total:

\[6 \text{ seeds/sqft} \times 10 \text{ sqft} = 60 \text{ seeds}\]

In practice, you'll be able to plant more than sixty seeds because of the additional spaces created by the combined edges of each square foot but this is an easy way to start planting effectively.

4.2 Sowing calender

To find out the best sowing season for each crop please refer to our sowing calendar on page 28-31.

More planting tips:

a. Planting depth: A simple thumb rule that an urban farmer needs to follow is that your seed should be as deep as it is large.

For example, if your rajma (kidney beans) seed is an inch long, it should be planted one-inch-deep. Seeds like spinach and chaulai (amaranth) should be covered with just a thin layer of soil since the seeds themselves are so small.

b. If you're planting during the middle of a season, like in June or December in north India, make sure you plant more densely than usual because it's quite likely that you may not get perfect germination.

c. Thinning: For root crops and legumes sow more seeds than needed and do ‘thinning’ to the required density once all the seeds have germinated.
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For example, put two seeds in each hole you have made for radish. Some of these seeds will fail to germinate. In these cases only one plant will be visible. Leave this as is.

On the other hand, when both seeds germinate, wait until their real leaves emerge. This should take about ten days.

Choose the weaker looking one of the two plants – usually the one with a thinner stem – and gently remove it with your index finger and thumb. Make sure you water the plant before doing this.

You can either eat the removed plant as a micro-green or mulch it in the same pot.

d. For brinjal, tomato, chillies and herbs one needs to plant saplings, instead of seeds. This will save you time and space in your growing areas.

4.3 Companion planting

Once you’ve mastered the ability to plant one kind of veggie in one space, you can begin attempting to plant more than a single species in one area. This results in an even better utilisation of space. The combination of different plants in one bed or container is called companion planting.

Our conventional wisdom dictates that only a single plant should be grown in a kyaari (flowerbeds) or gamla (flowerpots).

Remember, although this may look neat and symmetrical, monocultures do not exist in nature.

To get a sense of why companion planting works better, we need to understand nature’s most productive ecosystem – the forest.

Teeming with life from floor to canopy, forests provide shelter and food to a mind-boggling diversity of living things, including humans.
Each living organism lives in a symbiotic relationship with the other – plants, insects, animals, grasses, sub-soil microbes, subterranean fungi.

When one organism dies, it provides food for another. In both life and death, forest dwellers co-exist in an intricate web of mutually beneficial relationships.

Generally speaking, forests demonstrate that plants grow better when grown together.

Different families of plants need different nutrients from the soil; they don't necessarily compete.

In fact they help each other (and us) in pest control, pollination, space utilisation, yield, and, some claim, taste too.

But, of course, certain plants do compete with each other to win favour in the process of evolution.

Don’t worry, with a basic understanding of the plants’ growth cycle and characteristics, we can effortlessly learn to pair species that love growing together.

Let’s first review how plants occupy time and space.

a. Space: Different plants grow and occupy the space around them differently. Some grow straight-up; some rise vertically and then spread out laterally; some vine upwards if given support or sprawl themselves lazily over the surrounding floor space; some cover the soil evenly; and some grow downwards, into the ground.

So we try to pair plants together that will occupy different spaces and minimize the amount they compete for sunlight.

b. Time: Different plants also grow at different speeds. Some sprout and burst into shape within a week and others slug along for about a month before growing larger.

When combining plants we have to be careful that we don't put all slow- and fast-growers in the same group.

Rather, we should use this knowledge to our advantage, while waiting for slow growing plants to mature, we can already harvest a fast-growing one before it gets shaded under the larger companion.

Once we understand the space and time occupied by different plants, we can combine them more effectively. But we need to understand one more concept before making our companion planting plans: like humans, plants have families.

But unlike humans, plants are to be kept away from their family members to avoid pest attacks and competition for the same nutrients.

The basic thumb rule is that you don’t grow plants from the same family together.
The Spinach-and-Tomato Story: Keeping space, time and plant families in mind, we can, for example, grow spinach and tomato together. Spinach is from the Amaranthaceae family and Tomato is a nightshade: hence they won’t compete for nutrients. They also use different root zones; spinach is shallow-rooted and tomato has a relatively deeper root system. Above the ground, spinach grows shorter and can be more densely planted while tomatoes grow relatively tall.

Once the plants are full grown, the spinach will enjoy the dappled sunlight created by the tomatoes’ cover. In about 60-90 days your spinach harvest will almost be complete and the slow-growing tomatoes will have just matured and begun to give fruit.

Below is our easy-to-understand list of different plant families:

a. Nightshades:
The most common edible plants in this family are Tomato, Brinjal, Chilly, Capsicum, Potato, and Okra.

b. Gourds:
Vining summer veggies that love to sprawl on the ground or climb trellises like lauki (bottle gourd), Cucumber, Tori (ridge gourd), Kakdi (Armenian cucumber), Tinda (Indian squash) and Kaddu (pumpkin).

c. Alliums:
Relatives of the onion family like garlic, chives, leeks and of course onions.

d. Legumes (Beans):
Plants that have edible pods like french beans, peas, lobia (black-eyed peas) and sem fali (broad beans). Surprisingly, methi (fenugreek) is also a legume although we eat its leaves and plant it as green cover.

e. Brassicas:
This is what we call the “cabbage family”. It includes lettuces, cauliflowers, cabbage and mustard. They usually have yellow flowers and a stalk that shoots out from the plant’s centre.

Now here are some combinations for you to give a try: [sf = square foot]

a. Cucumbers and Corn (warm season)
The cucumbers sprawl over the ground or climb up a trellis while corn grows vertically straight up. Plant Density: cucumber 1/sf, corn 4/sf.

b. Corn and Beans (warm season)
The beans attract beneficial insects that prey on corn pests such as leafhoppers.

Tinda growing profusely in the partial shade of a crop of corn.
and leaf beetles. And bean vines climb up the corn stalks. Plant Density: beans 2/sf, corn 4/sf.

c. Chaulai and Brinjal (warm season)

*Chaulai* is a fast growing green from the Amaranthaceae family that can be cut multiple times for its leaves while the Brinjals mature and start giving fruit. Plant Density: chaulai 16/sf, brinjal 1 per 2 sf.

d. Turmeric and Corn (warm season)

Turmeric grows underground and loves the filtered shade created by the vertically upright corn stalk. Plant Density: turmeric 4 tubers/sf, corn 4/sf.

e. Radishes and Spinach (cool season)

Planting radishes on the boundary of spinach will draw leafminers (common pests) away from the spinach. The damage the leafminers do to radish leaves doesn't prevent the radishes from growing nicely underground. Plant Density: radishes 9/sf, spinach 16/sf.

f. Dhania and Tomato (cool season)

*Dhania* is a relatively fast growing green with a strong fragrance that aids in protecting the tomato plants by deterring pests. It also works complementarily with tomato in terms of its nutrient requirements. Plant Density: cilantro 16/sf, tomato 1/sf

g. Cabbage and Dill (cool season)

Dill is a great companion for cabbage family plants, such as broccoli and brussels sprouts.

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Traditional multicropping

We came across an amazing traditional planting combination during a visit to one of the villages in the hills near Dehradun last year. Six Plants: Ginger, Turmeric, Chilly, Pigeon Pea, Arbi, and Corn were planted together in the same space.

The plants are not only from different families and use space very effectively but the harvest of the various plants is staggered over a few months and provides a continuous supply of produce through the year.

Ginger, Turmeric and Arbi are slow growing underground tubers while Corn, pigeon pea and chilly grow relatively quickly vertically upwards. Each of these is also from a different family: Chilly is a Nightshade; Corn is a type of Grass; and Pigeon Pea is from the Legume family.
The cabbages support the floppy dill stems, while the dill attracts tiny beneficial wasps that control cabbageworms and other cabbage pests. Plant Density: cabbage 4/sf, dill 4/sf

4.4 The Advanced Companion Planting Process:

Once you’ve got the hang of basic sowing and companion planting, you can try some of these tips to make your planting even more space-efficient:

- For each bed, always start with a layer of ground cover. This can be any easy-to-grow leafy green like chaulai, palak, methi, sarson or kulfa. A ground cover like this will also act as a living mulch.
- Plant a few saplings of fruiting vegetables like tomatoes or brinjals as the main crop.
- Casually disperse seeds of a root like mooli or gajar as your boundary crop. These will grow happily along the side of your bed.

Please note: While carrying out mixed planting like this, ensure that you do not clip-off your tomatoes or beetroot leaves while harvesting your green cover.
It’s easy to start a garden. Anyone can do it. The difficult part is to keep it going. The truth is that the ongoing tasks of maintenance form the crux of gardening.

The more attention and love you give to your plants, the better they will grow. Thus, as you will realize in this chapter, gardening is not a one-time, one-off action. It’s not just about planting a seed.

Once you have successfully sown and planted your garden, you are now in an ongoing relationship of joy that needs to be integrated into your everyday routine as firmly as brushing your teeth or petting your dogs.

5.1 Maintenance Tasks:

a. Watering

Watering is one of the most important, and most overlooked, parts of gardening. It’s the one activity you’ll probably do for your plants every single day – sometimes even twice!

Beginner gardeners are often insecure about how much to water their plants. Adequate watering requires you to develop observation skills.

There is a saying that, “A farmer’s footsteps are the best fertilizer.” Likewise, an urban gardener’s footsteps are what make the garden flourish.

The morning is the best time to water your plants. Use a watering can with...
a shower head or a shower-head attachment for your pipe. The pressure of water must mimic the rain.

Do not pour a single jet of water at high-pressure onto your planters -- this will only lead to dislodged seeds and disturbed soil.

A well-watered container should be moist, throughout the day. Plants need moisture, not flooding. This way, the roots will find the right amount of water needed without being deprived of oxygen.

Plants should not droop at any time because a drooping plant (means a water-stressed plant). If the sun starts getting more intense and you see your plants drooping by 4pm or so, you should start watering twice a day, or make sure you water deeply in the morning.

Watering deeply means that the water percolates your whole container and not just the top 3 inches. To achieve this, it might help to give water either very slowly, or in two turns.

Wait for the soil to fully absorb the water – then water some more.

Once water has percolated to the bottom, you will see it draining out of the holes at the bottom. This actually should not happen.

If you see water draining out the bottom of your containers you are overwatering and leaching nutrients out of your potting mix.

In case you’re still not sure if you’ve watered enough, dig a bit into your containers with your fingers to ensure that there is moisture at least to 6-8 inches depth.

With some practice (and your improving observation) you will know how to deeply water without wasting litres that drain out from the bottom.

Water-stressed plants and irregularly watered plants – oscillating between lots of water one day, and no water on the next – are much more prone to diseases.

Getting your watering right will not just ensure the survival of your plant, but also its health, and therefore, the yield you get.
Here are some more tips to ensure that you’re watering correctly:

- Water your plants either early in the morning or in the evening to avoid evaporation loss. It’s also a cooler time of day to be working outside.
- Maintain a thick layer of mulch in all of your containers. This is crucial to prevent evaporation loss, especially during the summer.
- In summers, you must install a shade-net to protect your plants from extreme heat and to prevent evaporation losses. Please ensure you don’t use a shade net with a higher density than 30%. This will block too much light and lead to a reduction in productivity.
- Make sure you water with a jharna or fountain head. The high-pressure stream of a water pipe is very harmful for your soil. You can either use a fountain head attached to your pipe or a watering can.
- Water deeply by providing a gentle stream which allows soil particles to slowly absorb the water. Avoid flooding your containers – this can cause compaction.
- Strictly avoid overwatering: water should never drain out from under your containers. If this happens the overflowing water will drain away your soil’s nutrients as well.
- Ensure that your potting soil is evenly moist throughout your containers.

An easy way to check for moistness is to take a handful of soil and make a ball or clump.

a. The soil should be moist enough to form a firm clump that breaks easily if pushed with your thumb.

b. If the clump doesn’t form and disintegrates, it's too dry.

c. If it oozes water and sticks to your hands, then it’s too wet.

- Focus your watering on the root zone instead of the foliage. This will prevent fungal diseases, burning of leaves, and wastage of water.
- When you first sow seeds, you’ll need to water more frequently with less quantity of water. This is because the seeds are just on the surface of the soil.
- Once seeds germinate and your plants take root, you’ll need to water less frequently but with more quantity of water.

b. Jugaadu self-watering systems:

Ensuring regular adequate watering might be a challenge for people who are
A row of self-watering planters. 

Notice the overflow about 1-inch above the bottom of the pot. Since these pots don’t have holes at the bottom they hold a reservoir of water 1-inch high.

frequently on the move. A client who travels a lot asked us to create a way for her plants to have access to moisture even while she’s away. For her, we designed our first self-watering system.

This system holds a reservoir of water for the plants to continually utilise for a given amount of time. Watering is reduced to simply filling the reservoir every few days.

Therefore you’ll probably need to place a matka at every three-and-a-half-feet of your bed. Keep in mind that this kind of irrigation will only work on the ground.

Unless your containers are very large, you will not be able to place a matka in them.

Two easy cost-effective ways to make self-watering containers are by using terracotta matkas (round earthen pots) or dried coconut shells.

A matka simply needs to be submerged half-way into your raised beds and filled with water. Ensure that you place a cover on top to prevent evaporation loss.

Once filled, the matka will allow water to slowly percolate to your plants. Water will percolate to approximately 3 feet from the container.

The coconut irrigator is another simple and very low-cost solution. Simply take dried green coconut shells, fill them with water and submerge them completely into your raised beds.

Only a thin 1-cm lip of the coconut should be visible above the soil. This is to ensure that they don’t get filled with soil. Fill these with water and cover with mulch.

You need to place approximately 4-6 coconut shells for each plant. Also, make sure that your coconuts are dry; fresh shells will develop fungus and attract insects.
5. Ongoing Maintenance

c. Weeding

Along with watering, weeding is also one of the primary ongoing tasks for kitchen gardeners.

A ‘weed’ can be defined in the following ways:

- An unwanted, uninvited species consuming water and sunlight meant for our planted species.
- A species we have not yet learned how to use or eat.
- A species that humans have still not figured out how to grow in straight lines.

All three of these definitions are correct.

Weeds are just un-domesticated plants. We have not yet collected their seeds and developed them for traits favorable to us – traits like taste, size, etc.

Most vegetables we plant and eat were once ‘weeds’ or at least ‘wild’, until we collected their seeds and began propagating only the individuals with traits beneficial for us.

As ecological gardeners, we need to understand the importance of weeds as resilient ‘pioneer’ plants that germinate even in the most depleted soils and can, thus, help create biomass and replenish these soils.

But as pragmatic urban farmers with very limited space, we also need to ensure weeds do not consume vital resources meant for our vegetables, herbs and fruits.

To weed successfully, there is just one skill you need to develop – to recognise the plants you sowed as early as possible!

Most vegetables first show leaves that look very different from their real leaves that will come next.

Try to recognise these seed leaves (also called cotyledons) and remember them for next time. This will allow you to weed your beds at an earlier stage, as you won’t have to wait for the real leaves to show up to be sure you don’t pluck out your crop.

Here are some tips for weeding:

- Remove weeds as early as possible. As weeds grow larger, removing them will disturb the root zones of your plants as well. Never allow weeds to get larger than what you’ve planted!
- Once you remove a weed:
  - Mulch it immediately if it's very small, as in, simply place it on your bed as mulch.
• If it’s large, place it outside your container to dry and then mulch it.

- Weed at least once a week. Twice or thrice a week in the monsoon. In fact, whenever you spot a weed, immediately extricate it!

- Never let weeds go to seed. If this happens, they will spread uncontrollably.

- Maintain a thick 2-3 inch layer of mulch. The thickness of your mulch should block sunlight and weigh down upon any freshly germinating weed seeds.

- In general, it’s vital to understand that if a weed has grown in your soil, it has extracted some nutrients, however small that quantity might be. Thus, we must return these nutrients to the soil by mulching that weed.

Common weeds in Delhi and northern India:

You can Google these names to find images of and recognize these common ‘weeds’ in north India:

- Gajar ghaans/Congress grass/Parthenium: Remove this weed as soon as you notice it; if it goes to the seed, it will multiply uncontrollably.

- Calotropis: Known as ‘aak’ in Hindi. Can be used in home-made pest-control solutions.

- Sesbania aegyptiaca: This is a nitrogen fixer; should be ‘weeded’ out and mulched immediately.

- Shaitavari: This looks like asparagus; has certain uses in Ayurveda; if you aren’t a ‘vaid’, you should probably remove it.

- Surface amla: Its leaves look like amla (Indian gooseberry) and have minute balls resembling amla hanging in rows under each leaf stem. Remove and mulch as soon as you see this.

5.2 Other ongoing tasks

Apart from watering and weeding there are a number of smaller tasks that are necessary to maintain a successful garden :-

a. Gudaee: Provide aeration to the soil by doing weekly gudaee lightly turning the soil. Use a khurpi or trowel to lightly fluff up the soil around your plants but don’t get closer than 3 inches to the main sytem.

While doing gudaee also avoid going deeper than 2 inch so that you don’t disturb the roots.

b. Pruning: To avoid a build-up of diseases, remove yellow leaves, dead leaves and leaves from the lower parts of the stem. This will also improve air circulation and distribute sunlight more evenly for the plants.

c. Clipping of climbers: Help your climbers like karela (bitter gourd), lauki (bottle gourd) or tori (ridge gourd) to branch out by clipping off the main shoot once it is around 6 feet tall.
d. **Adding compost:** Once a month, add a handful of vermicompost or any other compost in the root zone of each plant fruiting plant (like tomato, eggplant and chilly).

Additionally, if you have these available add 2 tablespoons of bone meal, 2 tablespoons of ‘neem khali’ and a pinch of seaweed powder.

Water immediately after doing this. Adding compost after doing *gudaee* is more effective.

e. **Mulching:** Make sure that any open, exposed soil in your containers is covered with dry leaves.

This practice, called mulching, helps retain moisture, protects soil from washing out, and provides slow nutrients to your plants.

f. **Harvesting:** Well-timed harvesting at the correct stage of leafy or fruit development is important to ensure continued growth and supply of vegetables.

Once the lifetime of a crop has finished, remove it, and replant with a different family.
You have sown, planted, watered, weeded and mulched....you have given so much love and yet your plants get affected by pests! So-called ‘pests’ are often quoted as the kitchen gardener’s biggest hassle. They arrive in large numbers and infest and infect our plants, leaving them devoid of life and fruit.

No doubt, pests are a challenge every kitchen gardener needs to cope with, but, let’s first understand what we can learn from the occurrence of unwanted bugs and insects on our plants.

The forest, teems with a multiplicity of creatures – all suspended in a fine balance. An increase in the population of one results in an increase in the population of its predator, ultimately bringing it back into balance. This balancing act occurs in the biodiversity of the forest.

If we design our gardens keeping diversity in mind, pest problems become an unnatural and uncommon occurrence.

For example, we once placed a bird house in our terrace garden. A few weeks later, a purple sunbird moved in. One day we observed this sunbird fluttering around our brinjal plants. The bird was eating up the caterpillars that had recently begun infesting the plant. This is a fine example of biodiversity as a solution for pest problems.

Having said this, creating a garden that mimics the forest in our small balconies, terraces and back yards is not always possible.

Understanding (and designing) each of our small gardens as part of a larger biodiversity network spanning our cities – allowing at least birds and insects to move freely among them – can have a positive impact on our urban ecosystems. So don’t feel alone in your pest-related challenges, but recognize how connected your garden is to the green spaces, balconies and forest patches around.
6.1 The Philosophic Underpinnings of Effective Pest Management:

Before we delve into specific methods of keeping pests at bay, let’s get our facts and theory right. What we need to understand is that pests don’t invade our gardens because they wish to steal our food.

They arrive because they are nature’s way of restoring a balance or correcting an unseasonal – therefore unnatural – occurrence.

For example, when the seasons change in March and September a lot of bugs show up in our gardens because this is nature’s way of signaling the end of a season and the need to replant for the next season.

Even we humans need to change our diet slightly – hence the navratras – to cope with the slight stress our bodies endure during the change of season.

But what are pests? One or two insects are not the problem; they only become a problem – a pest – when there’s an overpopulation of a single species. Apart from eating the leaves of your plants, pests can be a problem, as they might carry plant diseases - aphids or whiteflies, for example, spread viruses between plants.

A rapid increase in the population of insects can be attributed to various factors. While the large migrations of aphids (yes, they migrate almost like birds!) is out of our control, there are other pest incidents which are due to a lack of diversity in your garden or occur because you aren’t growing seasonally – in essence, because the environment you have created is inappropriate for your plants.

This whole manual is designed to teach you how to avoid this in your home garden, and we will re-cap some important lessons here.

This said, don’t panic if you see insects in your garden, only about 2% of them compete with humans for food. Most bugs are carnivorous and feed on other bugs.

Most insects that you see will therefore actually be beneficial, feeding on pests, pollinating your plants or just adding to the biodiversity on your green patch.

6.2 The fundamental solution: get the basics right

The first and most important way of controlling pests in your garden is to ensure your plants are healthy and well taken care of.

After all, isn’t prevention better than cure?
The previous chapters have explained you, how to do this in detail.

**When thinking about the required cultural practices for effective pest management, just remember the following points:**

- Create a friable, nutrient-rich potting mix
- Ensure your garden receives at least 7-8 hours of direct sunlight
- Water appropriately
- Use additional manure with each new season
- Confuse pests by practising companion planting
- Make sure you only plant according to the seasons - don't try to grow cauliflower in the summer please.

**Remember: we must never try to step outside the rhythms of nature.**

### 6.3 Pest repelling plants

In addition to these fundamental points, we can actively repel pests with a set of plants with strong aromas: pudina (mint), dhania (coriander), garlic, onion, dill, basil, sage and marjoram. Also certain flowers contain properties that either invite beneficial insects or repel harmful insects. Beneficial insects prey on pests that cause damage to your garden.

Marigold is probably the most well-known plant for repelling insects. It repels whiteflies and nematodes. Nasturtiums planted near tomatoes and cucumbers can fight off aphids, whiteflies, squash bugs, and cucumber beetles.

Now place your chosen plants in small containers all over your garden. You can use 4-inch deep pots, or even cut plastic soft-drink bottles.

Place these strategically around your kitchen garden to cover your plants in a soft blanket of aroma.

These pleasant smells deter or confuse pests.

When placed in the same container some of these herbs and flowers might deprive your plants of nutrients, space and sunlight – hence the smaller, separate containers which can be easily moved around and made to stand guard wherever you like.

### 6.4 Brief guide to identify and deal with two of our most common bugs:

**a. Leaf miners:**

Insects – including flies, moths and beetles – lay their eggs on the surface of leaves. When these hatch they feed by burrowing into the leaves and eating the green tissue below.

I'm sure you've seen leaf miners. They leave a thin, winding trail of grey or grey-ish white on affected leaves.

If you look a little closer you may also see insect larvae or even a few blackish-brown pellets of insect dung.

They eat all kinds of plants including vegetables, fruits, flowers, trees and shrubs.
Damage caused by leaf-miners is rarely something to worry about. Simply remove the affected leaves.

To prevent leaf-miners, give your plants a weekly spray of neem oil with soapy solution.

b. Aphids:

Aphids, or plants lice, are extremely small bugs that multiply at an amazing speed – apparently a single aphid can produce up to 80 babies within a week.

They remain stuck on affected plants and slowly suck sap from them; causing yellowing and leaf curl and sometimes even damage to your plant’s tender new shoots.

They also excrete a sticky, sugary substance called ‘honeydew’. It has been observed that this sugary substance attracts ants. The best way to control aphids is to physically displace them with a blast of your garden sprayer or hose.

They rarely return to plants once thrown off them. Also, lady bugs love to feed on aphids.

Plant lots of marigold and nasturtium flowers in your garden. This should help keep the aphids in control.

6.5 Pest repelling sprays

One of our gardening gurus always claims, “Spraying doesn't exist in nature, so there's no need to create all these bug sprays, even if they're organic!”

What he's trying to say is that even spraying on leaves isn't a natural phenomenon. It's something humans have imposed on plants.

Of course, bugs aren't much of a problem for him because his garden, which is designed to resemble a biodiverse forest, is in rural south India.

For us, biodiversity-deprived urban dwellers, following the right cultural practices and planting pest-repelling
plants may sometimes just not be enough.

In this situation, regular application of the concoctions mentioned below is a useful way to control pests.

The key thing to remember is that organic pest-management is always proactive, not reactive.

Our natural solutions are designed to deter and confuse pests; physically displace them; or disable their reproductive capacities.

Our solutions are not designed to kill pests – they need to be proactively applied to your garden on a regular basis whether you see the pests or not.

At the same time, pest repellents, like human medicines, can produce resistance in pests.

Therefore, you need to balance your needs for pest management with the precaution to not get pests “used” to any particular spray.

Early morning is the best time to apply these sprays since it gives the plants time to absorb the liquid and minimizes evaporation loss.

6.6 Some concoctions of natural pest sprays that you can try:

a. General Purpose Spray: An all-purpose pest repellent and fungicide.

- **Ingredients:** Half-cup coffee brew, 1 garlic bulb, 1 tbsp pepper powder/red chillies, 1 tbsp liquid dish wash soap, 1 tbsp apple cider vinegar.

- **Process:** Use a half-cup of coffee brew with 1 tablespoon of liquid dish wash soap (preferably organic soap) and mix with 1 crushed garlic whole, 1 tbsp pepper powder or crushed red chillies. Blend this with 1 tablespoon of apple cider vinegar.

  Mix all the ingredients in 500ml water, give it a good stir, strain with a muslin cloth, and fill up your garden spray bottle. Spray all over the plant foliage, specifically underneath the leaves.

  **Usage:** Spray on vegetables and herbs every 4-5 days. Spray daily for heavy infestations. Spray in the evening as well in case of a pest-infestation.

b. Baking Soda Solution: Stops yellowing of leaves and viral attacks.

- **Ingredients:** 2-3 spoonfuls of baking soda, 1 tbsp vegetable oil (so that the final solution can stick to the leaves/plants) and 1 tbsp liquid dish wash soap (soap + water is always good to spray anytime you see pests.

  Add soap to other sprays to make sure the liquid clings to leaves, especially the undersides).

- **Process:** Mix ingredients well in 500ml water

- **Usage:** Spray on the foliage inside-out but not on the soil

c. Wood Ash: For cabbage grubs, white flies and white powdery mildew.
Ingredients: wood ash, flour, salt.

Process: Use a handful of wood ash, handful of flour and pinch of salt.

Usage: Sprinkle this on your plants. If you are using just wood ash, then you can also spread a thick layer of ash around the plants on the soil. This will prevent flies and moths from laying their eggs near the stems. You can also use phosphorous-rich wood ash as an instant fix for flowers falling from your plants.

d. Chilli-garlic Spray: Controls aphids, cabbage white butterfly, bean fly, caterpillars, mosquitoes, snails and wireworms.

Ingredients: 1 clove garlic, 2-3 hot green chillies, 1 onion

Process: Grind and soak ingredients in water for 24-48 hours, and then add 100 ml water with a little bit of dissolved soap. Stir and strain through muslin and store in a glass or plastic container (non-metallic container). Dilute 1 part of this solution in 5 parts of water before spraying.

Usage: Spray on vegetables every 4-5 days.

e. Milk Spray: This easy-to-make solution checks viruses like tomato mosaic and kills red spider mites, caterpillars and tomato worms.

Ingredients: Milk

Process: Dilute 1 part milk with 5 parts of water

Usage: Spray on leaves every few days.

f. Buttermilk spray: This spray destroys adult spider mites and their eggs, which get enveloped in the sticky mixture and suffocate.

Ingredients: Buttermilk

Process: Mix 1-part buttermilk with 5 parts of water and spray on leaves.

Usage: Spray once a week.

g. Lemon water: Used to prevent aphids.

Ingredients: 5 lemon peels

Process: Throw the peel of about 5 lemons into 300ml of boiling water and leave to simmer for half an hour. Stir and strain through gauze and then spray on the affected leaves and stems on your plants.

Usage: Spray once a week.

h. Sea weed spray: Aphids and other types of sap-feeding insects generally avoid plants treated with seaweed. Seaweed extracts have been proven to accelerate the health and growth of plants. Seaweed enhances photosynthesis via increasing a plant’s chlorophyll levels. It contains natural plant growth regulators which control the growth and structural development of plants.

At the same time it works within the soil to make more nutrients available to the plant. Seaweed also helps plants in improving cold tolerance.
- **Process**: Use 1 pinch of sea weed powder in 1 litre of water.
- **Usage**: Spray all plants once a week.

**i. Neem oil spray**: an excellent spray for general pest protection.

- **Ingredients**: 5 ml Neem oil, 1-2 ml liquid soap and 1 litre warm water.
- **Process**: Mix the warm water with soap. Then slowly add the oil while stirring vigorously. Fill the mix into your sprayer. Keep shaking or otherwise agitating the mix while spraying. Use the mixture within eight hours.
- **Usage**: Spray all your plants once a week.

**j. Neem khali**: Neem khali is the residual neem seed meal obtained as residue after extracting neem oil. It works as a fertilizer and pest repellent. When it is mixed into the soil it protects plant roots from nematodes, white ants and other soil insects. Neem khali also makes the soil more fertile.

- **Usage**: Use 2 teaspoons per plant while transplanting.

### 6.7 Other easy remedies:

**a.** A small pinch of asafoetida (hing) dissolved in 1 litre of water can help in better flower formation.

**b.** Pour water with two pinches of lime (choona) on plants that show signs of calcium deficiency.

**c.** Soak fish scales in water for two days in a closed container and pour the water on plants to deal with nitrogen deficiency. Or spray this solution once a week.

On a more philosophical note, plants produce food meant for all living creatures, so it is best to keep the natural balance intact by increasing biodiversity. Be innovative.

Choosing flowers and other plants that are native to your area will help, as the beneficial insects will already know what to look for.

Overall, there are no 100% perfect solutions for so called ‘pests’. One of our favourite solutions to a client’s ‘squirrel problem’ was to place little bowls full of *jowar* (sorghum) around her garden.

The squirrels preferred to eat this inexpensive grain instead of her recently planted seeds. Isn’t this a wonderful solution?

Everyone who comes to your kitchen garden – humans, animals, birds, insects, microbes – should leave with a smile on their face and a feeling of abundance in their stomach.

Every garden has a different growing climate, soil type and, of course, pests. You will have to experiment to find out what works best for your situation.
Each season our plants provide us nutrition in the form of green leaves, roots or fruits. Our soil's fertility supplies the nutritional elements to our plants.

As we harvest and eat to fulfill our body's requirements, these elements are removed and the soil's fertility is depleted.

As urban farmers, it is mandatory for us to return back to the soil the nutrients our plants have provided us.

We consume a few parts of the plant, but the rest is considered waste, i.e., peels, seeds, pith, etc.

If we do not return these portions back to the soil, our soil's fertility will rapidly decrease.

The human attempt to recycle organic wastes back into the soil to increase and maintain its fertility is what we define as composting.

Since we need our soil to remain fertile, composting should not be considered a separate process but a crucial part of urban farming.

Moreover, composting at home has important financial implications as well – anyone who has grown vegetables in the city knows that in each season, one has to purchase fresh compost to add to their beds before replanting.

Composting helps avoid this additional cost because we produce this compost right here, in our homes. Thus, composting is necessary to make urban farming financially viable in the long term as well.

Composting at home therefore has several benefits:

a. Our plants remain well nourished
b. We can save on costs for fertilising
c. We reduce the amount of waste we send to the landfill

Despite these benefits, people are often daunted by composting because they think:

1. It smells
2. It attracts flies and insects
3. It involves handling ‘disgusting’ food waste

The first two points are false assumptions. If you do your composting work properly, your pile will neither smell nor attract flies, nor will insects creep out into your house.

The third point is not only factually incorrect, it is also philosophically problematic.
We have this misconception that someone else, like the government, is supposed to deal with our waste.

This is the reason all of our cities are creating huge mountains of rubbish on their borders.

Low-income groups have to first handle our waste by collecting, sorting and transporting it; other disfavored groups live with the view, stench and health hazards associated with these hills of trash. And the whole city is affected by the pollution caused by fires on the landfill as methane is produced through the rotting organic waste.

So, as a principle, we believe that anyone associated with kitchen gardening must deal with their own kitchen waste, especially because you have a place to utilize it — right here in your own garden.

The next sections show you how to do this without feeling any disgust at all.

7.1. Waste segregation made easy

As a first step, composting demands that we segregate our waste the moment it is produced.

Let’s start simple: we first need to separate our organic waste from our inorganic waste.

a. **Organic waste** includes Vegetable and fruit peels; egg shells; bones; food leftovers; nut shells; milk product leftovers; paper. Anything that has an animal or plant product as its source.

b. **Inorganic waste** includes Plastic bags and packets; tetrapaks; nappies and menstrual hygiene products; glass; hard plastic boxes; metals; cardboard or paper lined with plastic; aluminium foil; electronics etc. Anything that contains plastic, glass or metals.

Segregation tends to be one of the most difficult steps for people since it involves handling food waste.

A simple way to overcome this is by keeping two dustbins, one for organic and the other for inorganic waste.

Or simply keep a large plastic bowl on your kitchen table for each day’s organic waste. This can then be put into your compost pile at the end of each day.

If you feel inhibited to start composting, it might be helpful to make yourself realise that a vegetable peel or fruit peel is not seen as “disgusting” the moment we peel.

It is only after lying in the bin, mixed with other trash and starting to rot, that the feeling of disgust arises.

The fresher the organic wastes you bring to your compost pile, the less disgust you will have to overcome!
7.2. Decomposing organic waste

Now, how will our organic waste decompose and turn into wonderful “black gold”?

This results in the action of anaerobic bacteria that produces an ‘eggy’ rancid stench. This stench can easily be found at your neighborhood municipal trash collection point (Our local governments seem to be experts in anaerobic composting).

What you need is aerobic decomposition. Successful compost piles must avoid anaerobic decomposition at all costs. We want aerobic microorganisms to decompose our waste, not anaerobic ones.

As we’ve learnt in an earlier chapter, the micro- and macro-organisms in the soil that live in aerobic conditions need air, darkness and moisture.

Thus, our compost piles must create the following conditions:

1. **Moisture** - provided by the fresh kitchen waste
2. **Darkness** - the pile must be kept in a shaded spot
3. **Aeration** - by mixing dry waste into the wet waste and stirring

We must keep in mind that there are also two kinds of decomposition:

- **a. Aerobic**: This happens in the presence of oxygen. This is the kind of decomposition we want in our compost pile. It creates a pleasant smell like when it’s recently rained.

- **b. Anaerobic**: Also called ‘decay’, this happens in the absence of oxygen. Anaerobic decomposition takes places when piles of kitchen waste become so tightly compacted that air fails to enter.
7.3. Piling it up

Before the next step, we need to understand a distinction within organic waste:

**a. Dry waste:** As the name suggests, dry waste is any kind of organic matter that has lost all its moisture. Dry waste tends to be brownish in color and brittle to the touch.

Here are some examples of dry waste – fallen leaves; wood shavings; cocopeat; paper; sawdust; peanut shells.

**b. Wet waste:** This is what usually comes out of your kitchen. It’s often green, pliable and contains moisture. This includes vegetables and fruit peels; food leftovers; green leaves; flowers; fresh garden cuttings. Most of our kitchen waste usually consists of wet waste.

Here are options you have:

1. **Dry leaves:** You could collect these from any neighborhood park during path-jhad season which occurs in around February/March in north India. Or ask a local *maali* (gardner) to help you out.

   Leaves are by far the best option to mix with your wet waste.

   They will decompose slowly and result in compost that is most similar to humus and fertile forest soil.

   Keep in mind, the smaller the leaves, the better.

   Crushing large leaves will help speed up the process as well.

2. **Cocopeat:** This is the crushed husk of coconuts available in compressed blocks online for about Rs. 200/- . These need to be expanded with water.

   This is a convenient alternative to dry leaves.

   Compost made with cocopeat results in a ready-to-use potting mix.

3. **Saw dust/wood shavings:** These can be used in making compost, although, they take a very long time to decompose.

4. **Paper:** This can be used as dry material as well, although, some people do caution that bleach and ink in paper can be poisonous.

   Paper should be shredded before being used in the compost pile, otherwise it will just stick together in large chunks.

In farms and rural areas, dry organic matter is easily available in the form of dry leaves that have fallen from trees. In the city, the ‘dry’ isn’t as easily available.
The Key Step to Good Composting: Stirring your Pile

To maintain good aeration of our compost pile, we must mix our wet kitchen waste with an equal amount of dry organic matter to ensure that gaps remain between the wet-waste elements.

To further improve the circulation of air in the compost pile, a small but crucial ongoing task of composting consists of mixing dry matter and wet waste. This is also referred to as ‘stirring’ your compost pile. It’s the one task you’ll need to carry out every day or every 2-3 days to make compost successfully.

Each time you add your day’s kitchen waste to your pile, you must add about twice as much dry matter as well and stir it up nicely with a garden fork or your hands in gloves.

7.4 What’s the right container?

Now that we’ve covered the basic mechanics of composting, let’s talk about how to choose containers. As discussed above, your container must keep your compost pile well aerated and dark. Another important point to keep in mind is container size. If you’re a beginner, do not choose containers that are larger than 2x2x2 feet (length x width x height). These become difficult to handle once they fill up.

Within this size limit, we can choose from the following containers:

a. Clay and terra cotta containers: These are easy to use and economical, albeit a bit heavy to carry around. A twelve-inch depth is the ideal size. A combination of 7 containers – one marked for each day of the week’s kitchen waste – can be very effective.

Try to get holes made on the sides to improve aeration. A great option for a lid is a bird bath, usually also available at nurseries and gamla-walas (places where pots are sold).

b. Cardboard boxes: These are a good, cheap option but not for beginners. These only last for about two or three compost cycles and can get a bit daunting for a beginner in case the boxes start breaking due to moisture.

Make sure you line the bottom of the box with a 2-inch layer of your choice of dry material – leaves, cocopeat, sawdust, paper – so that these absorb any excess moisture and leachate.

c. Fruit crates: These are an excellent option but you must line the sides and bottom with cardboard to ensure

Different options for dry matter: leaves, saw dust and cocopeat (top to bottom on the left).
darkness is maintained inside and pieces of your compost don’t fall out. You’ll also need to improvise a lid for these, something like a cardboard sheet.

d. Plastic buckets, gamlas and recycled drums: These can also be used but ensure you make plenty of holes on the sides to allow for aeration. You’ll need to improvise a lid for these as well.

e. Bamboo baskets: These are an excellent light weight and natural option, but again, line the sides and bottom, and improvise a lid.

f. Khambas: These are a ready-made solution introduced by the company Daily Dump in Bangalore. They consist of 3 terracotta containers stacked on top of each other.

More details can be found at ‘www.dailydump.org’. Readymade khambas are available with Edible Routes in Delhi as well.

7.5 Troubleshooting

Once you’ve chosen your container and started composting, keep these pointers in mind to become a real expert:

a. Ensure you place your compost container in a shaded spot outside your house. It should ideally be near your kitchen to make the daily task of adding wet waste convenient.

b. You must line the bottom of your container with 2 inches of dry material. This is to protect the base from moisture and staining, and to collect leachate. Leachate is a nutrient-rich liquid produced during the composting process.

Once your compost is ready, your base material will also be rich with nutrients.

c. Cut your wet waste into smaller pieces to speed up the composting process. This is the principle of surface area, i.e., the more surfaces that microbes can act upon, the faster they will decompose the material. So cut those large watermelon and papaya peels into smaller pieces before putting them into your pile.

d. Avoid putting non-vegetarian waste into your pile. This will attract rats, cats and other unwanted animals to your pile.

e. Hard waste materials like egg shells, seeds and peanut shells take a long time to decompose. Don’t be surprised if these remain in your pile for many cycles. Egg shells can be crushed to speed up their decomposition.
f. Cooked food can be added but this will attract flies unless you evenly spread it into your pile.

g. Large clumps of unused roti flour harden and take a long time to decompose. Try to break these into smaller clumps and then add them.

h. Add a fistful of soil from under an old banyan or peepal tree to speed up the composting process. This is called an inoculant, which is the introduction of beneficial bacteria to help decomposition.

i. If your compost looks too dry, you can add some water to it with a watering can. At all times your compost must be moist; neither drenched, nor dusty dry.

j. If your pile looks slimy and starts to smell, you haven’t mixed enough dry waste into it. Add some and mix the pile well.

Your compost should be ready within 60-90 days, depending on the weather.

Decomposition slows down in winter and speeds up in the warm season; the summer heat might require you to water your compost pile a little every day.

You will know your compost is ready if it is the color of dark chocolate and smells of the first rain. It will also be light and crumbly. But there will also be larger pieces that still haven’t fully decomposed. You can either directly use these in your kitchen garden or you can sieve your compost and place the incompletely decomposed pieces back in one of your piles.

This is all the information you’ll need to start composting.

Here’s what the step-by-step process of composting should look like now:
1. Start segregating kitchen waste.
2. Collect dry material.
3. Choose a container (Container 1) and place it in a shaded area near the kitchen.
4. Line the base of Container 1 with dry material.
5. Add kitchen waste + dry waste and stir every day.
6. Step 5 should go on until Container 1 is full.
7. Leave Container 1 to decompose and prepare a second container (Container 2).
8. Repeat Step 4 once and then carry out Step 5 for Container 2 until it fills up.
9. Meanwhile, stir Container 1 every 3-4 days; add water if it gets too dry.
10. Once Container 2 is full let it sit.
11. Empty and use the compost from Container 1; if it isn’t ready yet start another container (Container 3).

Happy Composting!
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Homegrown Sabzi
Urban Farming for Absolute Beginners

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