

Rooftop Gardening & Green Balconies

A
Step-by-Step Guide



Why to start a rooftop garden?

Benefits for you:

- Harvesting herbs, fruits, vegetables
- Producing chemical-free, organic food at your own doorstep
- Selling compost & making money
- Using the rainwater
- Reducing damage caused by rainwater
- Having a beautiful resting place on your roof



Benefits for the community:

- Reducing the heat in the neighbourhood by increasing vegetation and shadow
- Reducing damage caused by rainwater
- Reducing CO2 and fine dust
- Making the neighbourhood beautiful
- Making the neighbourhood sustainable



DID YOU KNOW?

1 m² can nearly produce 25 – 30 kg of vegetables a year!

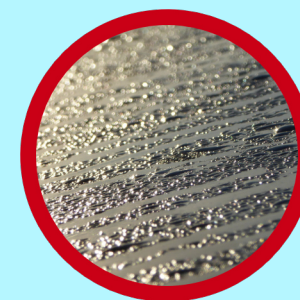
Can I start a rooftop garden?

CHECKLIST

See if your roof / balcony is ready to become an urban jungle!

1. The roof surface can bear the weight of the soil.

- The house/ structure does not show signs of weakness (e.g. bended beams/ posts)
- The house/ structure does not show signs of structural damage (e.g. cracks through the walls/ ceiling)
- The floors and the roof are load bearing (e.g. You can step onto the roof without causing damage and without bending the floors/ beams)



2. The roof is waterproof and has a drainage

- Rainwater does not seep into the room below
- Rainwater drains off quickly from the roof

INFO

If one of the two points is not fulfilled, don't give up! Talk to your local construction company or choose small plants with light weight soil and light weight containers!

How to start a Rooftop Garden?

STEP 1

Choose the LOCATION for your plants:

- Not all plants like direct sunlight. Many plants need a shaded location on your roof/ balcony
- Since the space might be limited, consider vertical gardening:
 - Climbing and trailing plants are ideal for vertical gardening and can cover walls, pillars or hang down the side of the building
 - You can also arrange pots vertically
 - Or use hanging pots
- If you use small- to medium-sized containers, you can easily change the location of your plants as soon as they show signs of too much or too little light



GOOD TO KNOW

How do I know if my plant gets too much sunlight?

- Leaf burn: brown patches on the leaves
- Bleached leaves: lightening of the leaf colour
- Dehydration: the leaves lose too much water (e.g. brown leaves, losing leaves)

=> Change the location of your plant!



How do I know if my plant gets too little sunlight?

- Almost a complete stop in plant growth: smaller leaves, no flowering, thin stems, no increase in height
- Etiolation: the space between two leaves increases and the stem grows thinner and longer to reach towards the light
- Shedding leaves: the oldest leaves turn yellow and die
- Loss of variegation: two- or more-coloured plants will change colour to mostly green. This is irreversible, but when you place the plant in the correct light, the new leaves will again have more colours



INFO

Fruiting plants need at least 8–10 hours of full sunlight during the day

Flowering plants need at least 4–5 hours of sunlight

Herbs need at least 3–4 hours of direct sunlight and bright indirect light for the rest of the day. Ensure that there is plenty of moving air around your herbs: stuffy and closed growing environments attract pests!

STEP 2

Choose the CONTAINERS you want to put your plants in:

- You can choose any container you have!
- Clean the containers before putting soil and plants in them!
- Place the containers over wedges or bricks to leave a clear gap between them and the root for proper drainage and passage of air!
- Ideas for vertical gardens: hanging pots, climbing aids
- You can put moisture proof wood, bricks or stones in larger containers to make an inner wall deviding your flower bed bewteen different plants
- Large containers can even hold a small tree!



STEP 3

Choose the PLANTS:

- ... based on the location: shadow/ sun throughout the day
- ... based on the containers: size, depths, water storage capacity
- Do you want flowering plants, green plants or something you can harvest like herbs, fruits, and vegetables? Or a combination of all of them?
- Do you want annual plants or plants which last longer?
- Do you have pets, which can reach the plants? Do you need pet-safe (non-toxic) plants?

DID YOU KNOW?

- You can always visit the new school garden at the Government Higher Secondary School (GHSS) to get more information and tips about urban farming and different plant species!
- Make money with your rooftop garden: You can convert your garden waste and organic food waste into compost, which can be sold! Look at page 10 for more information!

PRO-TIP

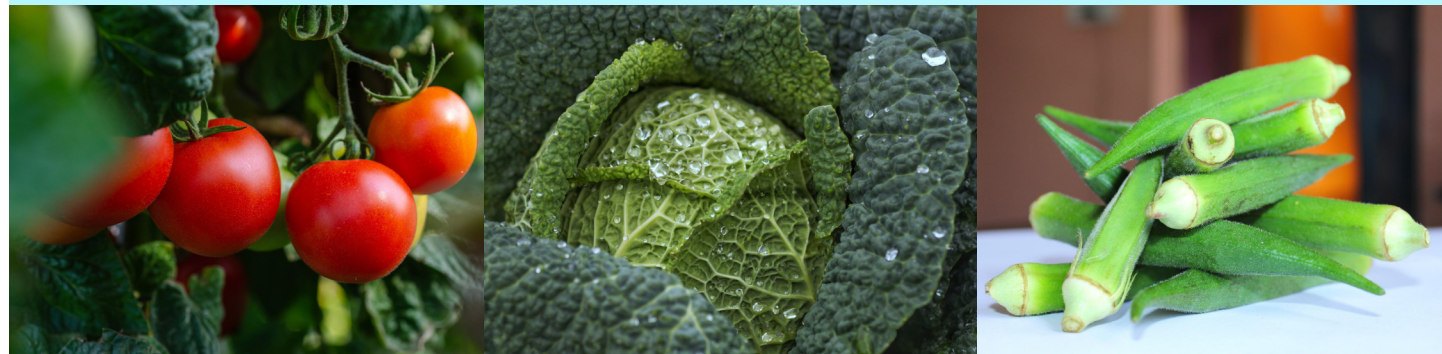


Eggshells can be a good source of calcium for your plants. Calcium is vital for all plants and it is essential for growing vegetable crops.

Simply collect eggshells from the kitchen, powder the eggshells in a mixer/ grinder and mix a couple of teaspoons of eggshell powder in the potting soil of all plants! The egshell powder can also be added to your compost bin to generate strong compost!

Some examples for you roof / balcony:

Vegetables: cabbage, cauliflower, broccoli, fenugreek, cucumber, tomato, brinjal, beans, cowpea, bhindi, bitter gourd, snake gourd, radish, turnip, potato, chilli, spinach, pumpkin, bottle gourd, onion, taro root, ...



Herbs & medical plants: aloe vera, tulsi, brahmi, kari patta, vetiver, aparajita plants, giloy, malabar nut, coriander, basil, mint, lemongrass, ajwain, camphor paan, big cardamom, tumeric, ...



Fruits: phalsa, star fruit, mulberry, lemon, ...

Fruit trees (planted e.g. in plastic drums): mangoes, guava, jackfruit, pomegranate, bael, banana, ...

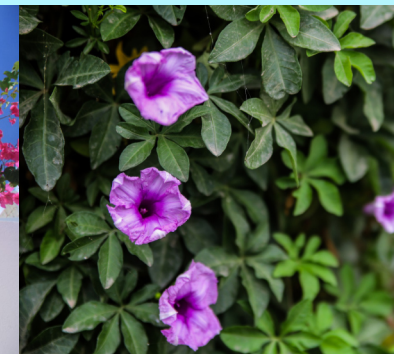


Vertical gardening (climbers & trailing plants): railway creeper, passion flower, thunbergia, bougainvillea, climbing roses, ...

Bougainvillea



Railway Creeper



Passion Flower



Flowering annuals: antirrhinum, matthiola, sweet peas, pansy, dahlia, chrysanthemum, marigold, alyssum, phlox, dianthus, verbena, ...

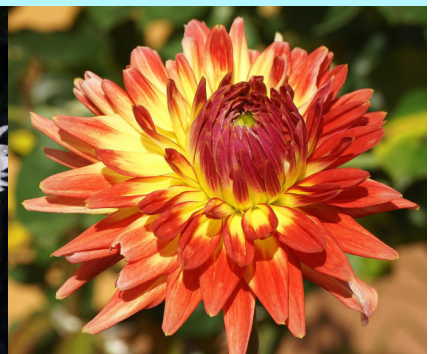
Antirrhium



Chrysanthemum



Dhalia

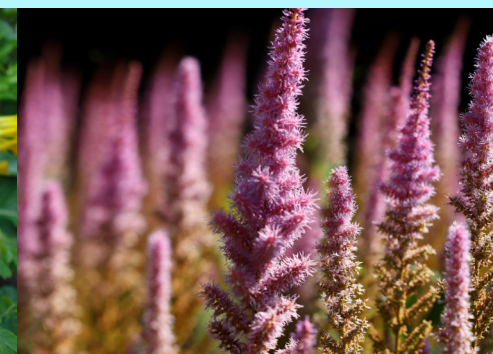


Plants for shaded places (e.g. north-facing balcony, under a tree / patios): indian pink, yellow bleeding heart, dwarf chinese astilbe, hardy begonia, creeping veronica, leopard plant, ...

Yellow Bleeding Heart (Corydalis lutea)



Dwarf Chinese Astilbe



Leopard Plant (Ligularia)



STEP 4

Choose a METHOD to WATER your plants:

- You can use rain gutters and barrels to collect rain water for your plants
- You can also built or buy water storing pots for your plants
- Ensure that the foilage is dry when watering in peak sun: the little droplets work as a magnifying glass for sunrays and lead to burnt leaves
- You can install a drip irrigation system! It has many advantages compared to conventional watering methods:
 - It saves time and reduces manual labour
 - The water is directly delivered to the root zone of the vegetation
 - No water loss through surface runoff or evaporation
 - Less growth of weeds
 - No sprinklers or hose pipe needed
 - Healthier and quicker growing plants
 - Less risk of mildew and certain plant diseases
 - All you need is: a soaker hose, and optionally a mechanical timer to time the watering automatically
 - Pay attention to the amount of water your plants need: Plants in the shadow need less water than the ones in sunlight!



Have you made your decisions?

Creating drawings and sketches can help you figure out the design you want to go for!

Happy Gardening!



HOW TO COMPOST SMELL-FREE

1. Choose a container
 - Which container? Bucket, drum, terracotta pot, ...
 - Drill small holes in the container at different levels to let air inside
 - You can also buy a Khamba (stack composter) or a composting starting kit
 - Tip: Having two containers allows a continuous cycle, so that if one is full, you can use the second container
2. Add a base layer of soil or compost and dry leaves
3. Put your green waste in the container
 - What waste? Edible kitchen waste and garden cuttings – like leftovers, fruit peels, vegetables, eggshells, coffee/ tea powder (no plastic!)
 - Don't compost coconut shells, glossy or coated paper, dog/ cat poop
 - Tip: Shredding the waste speeds up the composting process!
4. Add the browns
 - What browns? Shredded leaves, sawdust, coco peat, ... Something to control the moisture of the waste
 - Tip: If your compost starts smelling, try adding more browns and give the pile a stir!
5. Optional: Help the microbes
 - Either use semi-done compost to get microbes
 - Or add cow dung to create microbes
 - Tip: To kick-start the microbial colony, add buttermilk!
6. Provide Oxygen
 - Use a rake to give the pile a quick turn every 4 days to ensure air circulation
 - This ensures smell-free composting and avoids insect infestation
7. Layering
 - Keep repeating the previous steps until your container is full: add layers of kitchen waste and browns daily, ensure oxygen flow by stirring the pile!
 - Add more browns if the mix becomes too soggy, but keep in mind: your pile should be damp! You can also add water, if the mixture is too dry.
 - The last layer of your pile should be browns to avoid attracting flies and bugs
 - Cover the container with a plastic sheet or a wooden plank to protect it from sun and rain
 - Keep the container in a shaded space to protect it from harsh sunlight

INFO

The composting process will take up to 40 – 50 days: the outcome is dry, dark brown, crumbly, and smells like earth.



DID YOU KNOW?

- You can sell the compost and make some extra money! Ask the Resident Association on how to participate!
- Alternatively, you can use the compost as natural fertilizer for your own plants!
- Use 50 – 60% of the compost as a base layer to start a new composting container!

Thank you for making the
neighbourhood and the world
more sustainable!





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