



Rooftop Gardening Notes

Green
Rooftops
Brighter
Futures!

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Let's Grow a Greener, Healthier Tomorrow!

Chapter 2



Rooftop Gardening



“Grow Today, Greener Tomorrow”

Rooftop gardening means growing plants on the roof of a house, school or building using containers, grow bags or specially prepared beds.



A beautiful rooftop garden

It can be used to grow:

- Vegetables
- Fruits
- Herbs
- Flowers
- Medicinal plants



2.1 Introduction

- Rooftop gardening is an effective way to use unused rooftop space and turn it into a green area.
- It is especially useful in cities and towns where open land is limited.
- Plants are grown in pots, containers, grow bags or raised beds.
- It reduces dependence on market produce and helps in getting fresh and healthy food.
- Even a small space of 1 m^2 can yield around 10 kg of vegetables in a year.

Importance / Benefits of Rooftop Gardening



★ Rooftop gardening is not just about growing plants, it also improves the environment and our well-being.

Green
Roofs
Brighter
Lives

2.2 Process Chart

- A process chart lists all the tasks to be done, along with the estimated dates of completion and the person responsible.
- It helps in planning the work in a systematic manner.
- It makes sure that no important step is missed.

Plan Well
Grow Well
Live Well 

2.2.1 Scoping Work

- Before starting a rooftop garden, we need to decide the scope of work.
- Important points to consider:
 - ① **Which plants should be grown?**
→ Choose plants suitable for your local climate (refer to agro-climatic relationship). Prefer short duration crops (2-3 months).
 - ② **Purpose of growing plants**
→ e.g., vegetables for midday meal, flowers for festivals.
 - ③ **Space available**
→ Decide where the garden will be created and how many pots can be placed.
 - ④ **Sunlight requirement**
→ Select a place that gets at least 5-6 hours of direct sunlight.
 - ⑤ **Water requirement**
→ Prefer plants that need less water.
 - ⑥ **Investment and materials**
→ Consider cost of pots/containers, soil or other growing media, weight of pots and any other specific requirements.

A clear plan today leads to a successful and sustainable rooftop garden tomorrow.

2.2.2 Making the Process Chart

- List all the activities, decide the time needed and assign responsibility.
- An example template is given below:

Table: Process Chart for Rooftop Gardening

S. No.	Task	Estimated Date	Responsible Person
1	Layout of rooftop garden		
2	Soil testing and preparing potting mixture		
3	Germination test		
4	Sowing		
5	Maintenance (irrigation and weeding)		
6	Protection from pests and diseases		
7	Monitoring growth and providing nutrients		
8	Harvesting		
9	Packaging and transport		



Plan
Organise
Do
Achieve

2.3 Site Visit

- Visit nearby rooftop gardens with your teacher.
- Possible places: residences, schools, offices, hospitals, hotels or educational institutes.
- Observe the types of plants grown, containers used, irrigation system, layout and maintenance practices.
- Interact with the gardener/owner and ask questions.
- Note down important points and use them to improve your own plan.

Points to Observe:

- ✓ Types of plants
- ✓ Type of containers
- ✓ Watering method
- ✓ Use of organic manure
- ✓ Pest control measures
- ✓ Overall layout and space management



Learn from others' experience to make your own rooftop garden better!

2.4 Designing the Layout

- A well-planned layout helps in efficient use of space, easy maintenance and healthy plant growth.
- Before placing the pots, study the shape and size of your rooftop.
- Keep pathways for movement, watering and other activities.
- Group plants with similar requirements together.

Key Points to Consider

1 Space

- Leave enough space between pots.
- Keep clear pathways for walking.
- Use vertical space with racks and shelves.

2 Sunlight Requirement

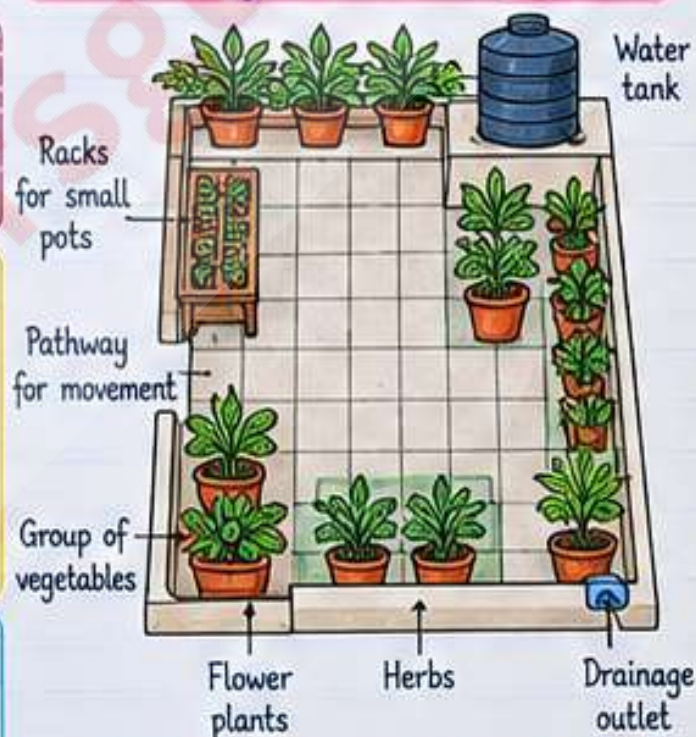
- Most vegetables need at least 5-6 hours of direct sunlight daily.
- Use open areas for sun-loving plants (tomato, chilli, brinjal etc.).
- Use partially shaded areas for herbs and leafy greens (mint, coriander, spinach).

3 Weight and Safety

- Rooftops have a weight-bearing limit.
- Use lightweight containers (plastic grow bags, HDPE pots, wooden boxes).
- Avoid very heavy cement pots.
- Distribute weight evenly.



Example Layout of a Rooftop Garden



A well-designed layout makes your rooftop garden organised, safe and productive.

More Layout Considerations

4 Water Management

- Keep a water source (tap or storage tank) nearby. Use drip irrigation or watering cans.
- Ensure proper drainage - extra water should not accumulate on the roof.
- Use a tray or stand under each pot.



5 Shade Provision

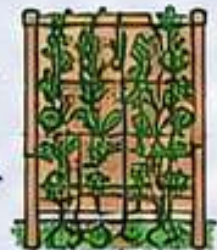
- Some plants (like lettuce, mint, coriander) grow well in partial shade.
- Use shade nets, green mesh or a bamboo frame during hot summers.
- You can also use larger plants or a pergola for shade.



Shade net protects plants from harsh sunlight.

6 Wind Protection

- Strong winds can damage plants, especially on tall buildings.
- Use windbreaks like trellis, nets, bamboo screens or place taller plants (e.g., lemon, curry patta) on the windy side.
- Keep fragile plants in inner areas.



Windbreak keeps plants safe.

Things to Avoid

- | | |
|-------------------------------|--|
| ✗ Overcrowding of pots | ✗ Keeping plants without proper sunlight |
| ✗ Blocking drainage outlets | ✗ Water stagnation |
| ✗ Using very heavy containers | ✗ Ignoring safety and weight limits |

Plan
Smart
Grow
Better!

2.5 Selecting Materials

- Choose materials that are easily available, durable, lightweight and eco-friendly.
- Use recycled materials where possible.
- Select materials based on the type of plants and your budget.

Common Materials Used

			
Plastic / Clay Pots (lightweight)	Grow Bags (easy to handle)	Wooden Boxes (recycled wood)	Crates (reused)
			
Soil / Potting Mixture	Cocopeat (holds water)	Vermicompost (provides nutrients)	Gravel / Pebbles (for drainage)
			
Shade Net (protection)	Bamboo Sticks (support)	Metal / Plastic Mesh (trellis)	Drip Irrigation Kit (water saving)



Reusing and recycling materials helps reduce cost and supports a cleaner environment.

Reduce
Reuse
Recycle



2.6 Selecting Tools

- The right tools make gardening work easier, faster and more efficient.
- Choose tools that are safe, easy to use and suitable for the available space.

Essential Tools for Rooftop Gardening



Hand Trowel
(for digging)



Pruning
Shears
(for cutting)



Watering Can
(for irrigation)



Hand Rake
(for loosening
soil)



Sprayer
(for pesticides/
organic solutions)



Gardening
Gloves
(for safety)

2.7 Bill of Materials (BoM)

- Before starting, make a list of all the materials, tools and other items required.
- Estimate the quantity and cost.
- This helps in budgeting and avoids last-minute expenses.

Example Bill of Materials for a Small Rooftop Garden

S. No.	Item	Quantity	Estimated Cost (₹)
1	Grow bags (12 inch)	10	500
2	Potting mixture (soil + compost + cocopeat)	50 kg	300
3	Seeds (vegetables & herbs)	5 packets	150
4	Drip irrigation kit	1 set	600
5	Hand tools (trowel, rake, pruner)	1 set	400
6	Shade net (2 m x 3 m)	1 piece	350
7	Miscellaneous (labels, trays, gloves etc.)	-	200

Benefits of Making BoM:

- ✓ Helps in budgeting
- ✓ Proper planning
- ✓ Avoids wastage
- ✓ Easy to arrange materials
- ✓ Useful for future reference

Plan your budget,
Grow your dreams!



2.8 Pot Preparation and Sowing.

Preparing the Pots/Containers

- Use lightweight, durable and recycled containers.
- Ensure proper drainage holes at the bottom.
- Clean the containers before use.
- Fill with a suitable growing media (potting mixture).
Place the pots at the decided location after filling.



Earthen Pot



Grow Bag



Wooden Box
(with drainage holes)

Growing Media / Potting Mixture

- Good growing media is loose, porous, fertile and water retaining.
- A common mixture: 1 part garden soil + 1 part compost (vermicompost) + 1 part cocopeat/sand.
- You can also add leaf mould or dried cow dung.
- Mix all components well before filling in containers.



Garden Soil
(1 part)

+

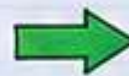


Compost
(1 part)

+



Cocopeat
(1 part)



Well mixed potting mixture

Healthy
Soil
Healthy Plants
Happy You!

pH Testing and Adjustment

- Ideal pH for most vegetables is 6.0 – 7.5 (slightly acidic to neutral).
- You can test pH using pH paper or a soil testing kit.
- If soil is acidic (pH < 6), add lime, wood ash or crushed eggshells.
- If soil is alkaline (pH > 7.5), add compost, leaf mould or sulphur.



Right pH
Better
Nutrient
Uptake
Healthier
Plants

Seed Germination Test

- Select 10 healthy seeds of the crop.
- Place them on a moist cotton cloth or in a small tray with moist soil.
- Keep in a warm place for a few days.
- Count the number of seeds that germinate.
- $\text{Germination \%} = \left(\frac{\text{Number of seeds germinated}}{\text{Total seeds}} \right) \times 100$

Simple Germination Test



Day 1
(seeds)



Day 3
(sprouting)



Day 5
(seedlings)

Use good quality,
fresh and disease-free seeds.

2.9 Plant Protection

Regular Care

- Water plants as per requirement.
- Remove weeds regularly.
- Keep the pots clean and check for pests.
- Add compost or organic manure after 3-4 weeks.
- Provide support to climbers (e.g., tomato, beans).
- Remove dead or yellow leaves.

Observe
Care
Record
Grow
Improve!



Irrigation and Watering Methods

- Most rooftop plants require regular but moderate watering.
- Use watering cans, drip irrigation or reused plastic bottles.
- Water in the early morning or late evening.
- Avoid overwatering (may cause root rot).



Use drip irrigation
for water saving.

Water Holding Capacity (WHC)

- WHC is the ability of soil to hold water for plant use.
- Cocopeat and compost increase WHC.
- Better WHC means less frequent watering.
- Check the soil moisture by touch before watering.

Soil Moisture Check



Too dry
(needs water)



Ideal
(moist)



Too wet
(reduce watering)

Water wisely, every drop counts!



Common Pests and Diseases

- Aphids, whiteflies, mealybugs
- Caterpillars, snails, slugs
- Fungal diseases (powdery mildew, leaf spot)
- Yellowing of leaves, stunted growth

Organic Control Measures

- ✓ Use neem oil spray
- ✓ Prepare Dashaparni ark
- ✓ Remove affected leaves
- ✓ Use sticky traps
- ✓ Keep the garden clean
- ✓ Encourage beneficial insects (like ladybugs)



• Healthy Plants
Pest-free Garden

Weed Management

- Remove unwanted plants regularly.
- Use hand weeding or small tools.
- Mulching (dry leaves, straw) helps in reducing weed growth.



• No weeds
More nutrients
Better growth

2.10 Harvesting and Storage

- Harvest at the right time for best taste and nutrition.
- Use clean scissors or knife.
- Handle produce carefully to avoid damage.
- Store in a cool, clean and dry place.
- Some vegetables can be refrigerated for longer shelf life.



• Freshly
Grown
Freshly
Enjoyed!

2.11 Packaging and Transport

- Use clean, reusable boxes or bags.
- Keep harvested produce in a shaded place.
- Transport carefully to avoid damage.

2.12 While Developing the Rooftop Garden

- Ensure safety and follow weight limits.
- Use eco-friendly and recycled materials.
- Maintain cleanliness and conserve water.
- Keep learning and make improvements.



Small Steps on the Rooftop, Big Steps for a Greener Tomorrow!