

Terrace Gardening of Vegetables

**Preeti Yadav, Sumit Deswal
and Sandeep Dagar***

Department of Vegetable
Science, CCS Haryana
Agricultural University, Hisar
(HR.)



*Corresponding Author
Sandeep Dagar*

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INTRODUCTION

Gardening is just not feeding the body but the soul. The glory of gardening is hands in the dirt, head in the sun and heart with nature. The art of creating the greenery by growing vegetables and its maintenance on the roof top is known as “Vegetable Roof gardening” or “Terrace gardening”. Vegetables are cultivated on balconies, terrace or roof of building. It is a type of kitchen garden that has been shifted from ground to roof due to constrain of space. Vegetables can either be grown in container or on beds depending on the type of vegetable, root depth and space needed for growth. In this era of urbanization, population in Indian cities are increasing day by day as people are shifting from rural area to urban for work and a good lifestyle and agricultural land are converting to residential and industrial land. Demand for food and expenditure on food products is also increasing at an alarming rate. Majority of us live in apartments and buildings and do not have agricultural lands or gardens to grow plants. We may be earning more and buy more but the quality of our lives has declined. The air we breathe, the food we eat, the water we drink all have been contaminated with harmful chemical, inorganic fertilizer, pesticide and pollution. This crucial circumstance, created a dire need to think over any possible solution for this situation and then the practise of terrace gardening came into picture. When we cannot avoid utilizing open spaces on the ground for the construction of buildings and other utilities, then at least the open spaces available above these buildings can be utilized for plantations and gardens. Synergism between building construction and agriculture creates a small scale resource saving system in the innovative form of green urban architecture known as Zero acreage farming (Z-farming). Thus, this practice of gardening not only provide fresh chemical free home produce but also maintain ecological balance by reducing indoor temperature by 6-8 degrees in urban areas and develop nature friendly behaviour among citizens.

Although adoption and implementation of terrace gardening has become a necessity now a days in urban centers but the Indian urban and per-urban areas are still lacking in this innovative practice. So, awareness and motivation must be created in citizens towards this practice for sustainable development.

Vegetables Preferred For Terrace Gardening

Shallow rooted vegetables including leafy vegetables (coriander, fenugreek, amaranthus and spinach) and root vegetables (carrot beetroot and radish) and bulb crops (onion and garlic) are best suited for terrace garden. Although, medium rooted vegetables including okra, brinjal and tomato can be grown on containers. Gourds which have climbing nature are trailed on poles and vertical space.

Types of roof top garden

- 1. Direct producing green roofs:** On which crops are directly grown into (shallow) beds in a soil-based growing medium that is possibly placed on top of a waterproof membrane or additional layers such as a root barrier, drainage layer and an irrigation system.
- 2. Rooftop container gardens:** Involve growing of vegetables in pots, buckets, containers and bottles which contain a soil-based growing medium. This medium can be made up of mixtures of soil, compost or woodchips. Rooftop containers can range from simple pots to more elaborate systems. As much as possible locally available and recycled material could be used.
- 3. Rooftop hydroponic systems:** Which involve growing plants using water based nutrient solutions in place of soil. They require on-going fertilizer inputs. Both exposed hydroponic systems as wells are covered system under cover (glass or plastic) are practised

to increase yields and extend the growing seasons.

Requirements to Start A Terrace Garden

- 1) Space:** The open space on terrace and balcony is utilized to grow vegetable. The roof of garden should be very strong and water proof. There must be proper slope in roof to avoid stagnation of water. After construction of roof, polythene sheet of 800-gauge thickness should be spread on the roof before making beds. Determine the space we have as it will be important to determine the number of pots, raised beds can be accommodated.
- 2) Sunlight:** Sunlight is mandatory for the growth of plant as it is the required for photosynthesis. One must ensure that our terrace receives full to partial sunlight. An excellent location is which receive full sunlight and good receive partial sunlight in morning or afternoon hours while a location with no sunlight is considered poor.
- 3) Water:** The terrace must have an access to water source through an appropriate medium. Also, good understanding of irrigation habits and requirement of plant is necessary to maintain proper growth of plant.
- 4) Soil Media:** For terrace garden, a specialized soil medium prepared by mixing with compost, river sand and organic manure is commonly used. Sometimes, sand mixed with coco-peat and compost are also used. As coco-peat is inert in nature and does not provide any valuable nutrients to the plants makes the addition of organic nutrients like vermicompost, biofertilizers and biocontrol agents to the peat necessary. A good propagating medium must be firm, possess sufficient moisture, retention capacity, porous and dense to hold the cuttings or seeds in place during rooting of germination and must be

free from weed seeds, nematodes and pathogens. Chemical free red soil: sand: compost (1:1:1) are best suited for vegetables

- 5) **Containers:** Containers like earthen pots, cement pots, damaged bowls, fractured buckets, plastic jars, tin box, unused water cans, plastic barrels, worn jean pants, etc. can be used as per choice and desirability. The size of the container depends on the plants of your choice selected to grow. Small sized containers are favourable to grow leafy vegetables and tender annuals while medium sized containers for chillies, tomatoes and other shrubs and large containers are exclusively used to grow climbers and creepers. Colour of containers is also a selection factor as light-coloured containers absorb less heat than the dark coloured ones. Plastic trays for containers to hold off excess water should be used to avoid damage of floor upon leaching.
- 6) **Seedling Tray:** A few plants can grow well only when they are transplanted from seed trays to containers. Seed trays offer baby plants to grow. Later, they will be transferred to new soil. In order to obtain the baby plants, the seeds are to sown in seedling tray and later transplanted to containers. This process of transplantation reduces the harvesting time as compared to direct seeding. A few vegetables such as celery, egg plant, collards, onions, peppers, tomato grows well when transplanted. If seed trays are not available, seeds can be sown in one container and when they start to germinate and sprout a few leaves they are then transferred to another container. In general, transplantation is done after 30-40 days after germination. Cardboard boxes, broken

egg boxes, ice cream cups, egg shells can be used as seed trays.

- 7) **Seeds:** Seeds can be procured from local nursery, online stores, centres, units or outlets belonging to central or state government, or even from friends or neighbours.
- 8) **Shade Nets & Poles:** To Provide protection to plant from scorching sunlight, heavy rains, hails and strong winds shade nets are required. Wooden planks, PVC pipes or bamboo sticks can be used as trellis to support cucurbitaceous vegetables including bottlegourd, ridgegourd, spongegourd etc.
- 9) **Organic Manures:** In order to supplement the soil, fertilizer mixture of 15:15:15, N:P: K @ 5-10 g/pot/ box can be added. Nitrogen offers growth of healthy leaves, while phosphorus helps in good root and shoot development and potassium contribute towards tastier produce. Neem cake is added to the soil as they are best pest repellent and can prevent pest and pathogen growth in the soil. In addition to it, ginger oil and antiseptic soap sprays can also be substituted to sustain from pesticides. Addition of panchakavyam is generally recommended to soil once a week to increase the microbial activity and to enrich nutrients in the soil. The optimum pH for a soil in terrace garden should vary between 6.0 and 7.0. If the pH of the soil turns acidic, wood ash should be supplemented to the soil. If the soil turns alkaline more of compost should be added to neutralise the soil.
- 10) **Tools:** Hand trowels, secateurs, hoe, gardening gloves, spade, fork, shovel, rake, rose can, hand spray, bamboo stakes, jute strings and a rack to store them.

Procedure of Setting and Maintaining A Terrace Garden

- I. Prepare the potting soil or growing medium. If done on directly on terrace surface than prepare the surface and then put growing medium. Make raised beds with the provision of water drainage. If done in pots or container than put the growing medium in pots after checking for holes and placing them in plastic trays.
- II. Seed should be filled loosely with a gentle tap. Leave at least one-inch space on the top of the pot for irrigation.
- III. Cover the top soil with a layer of dry grass or straw to offer protection till the seedlings emerge. Grass or straw are removed when the plant is ready for transplantation generally at 3-4 leaf stage. After transplanting irrigation is done.
- IV. Removal of certain parts of the plant that are of no use is pruning. Brown, yellow or wilted leaves should be pruned immediately. Weeding hoeing and pest management should be done timely
- V. Harvest fruits and vegetables when reached maturity. Pluck leafy vegetables frequently when tender. Similarly, root vegetables should be pulled out before it gets fully matured.
- VI. Once the season is over or plant growth is completed, the plants should be removed out from the pot. The soil is to be dumped in a place and broken free. Organic manures can be supplemented after 15 days and repotting needs to be done for next plant growth.

Tips for Maintaining A Prolific Terrace Gardening

- ✓ Staking (bamboo sticks) is used for plants like lab-lab, ribbed gourd, bottle gourd and snake gourd as they need to

be trained in a pandal system for proper support.

- ✓ Check on weed is mandatory. Hand hoeing the weeds by uprooting them completely from soil offers aeration and healthy plant growth.
- ✓ Do not crowd the place with large number of small containers and pruning be practised timely.
- ✓ Even after pest and pathogen controls are applied and no further visible recovery seen in plants, it is mandatory to nip off the infected portion to prevent further spread.
- ✓ If germination is delayed after seeding, check for its appropriate season for good growth.
- ✓ Plants can grow healthy only upon compulsory exposure of 6-8 hours duration in sunlight.
- ✓ Avoid planting the same plant in the same pot and soil even after harvest.
- ✓ Browning along the edges of the leaves indicates excessive salt content or excessive fertilizer in the soil. Water deeply to flush of the contents and remix the soil.
- ✓ When stem in the base of the plant starts to turn yellow, it is indication of heavy watering.

Advantages of A Terrace Garden

- ❖ Provide fresh fruits and vegetables high in nutritive value.
- ❖ Provide fruits and vegetables free from toxic chemicals.
- ❖ Help to save expenses on purchase of vegetables.
- ❖ Create awareness among children on dignity of labour.
- ❖ Better taste of home garden harvested vegetables than from the market purchased one.
- ❖ Contribute to environment by absorbing carbon dioxide and reduce the temperature.
- ❖ Minimize ecological imbalance in urban areas.

- ❖ Gardening is a good practice of exercise and it connects one with nature.

CONCLUSION

Terrace gardening of vegetables is the best method to meet household requirements in urban areas where land availability is scarce. This not only provides vegetables for consumption, but one can also generate financial benefits through proper management and production of vegetables free from pesticides and other chemical residues.

Terrace gardening of vegetables considered as green roofs is advantageous in terms of providing a cooling effect in summer by reducing the urban heat island effect, providing clean air, and modifying the urban environment. The importance of vegetable terrace gardening is being recognized as it increases oxygen production and controls environmental pollution. Also, creates curiosity and passion and reduces stress in a person. Hence, practice of terrace gardening is essential since it adds more value in the human life.