

**Productive task**:

1. Understanding a need for preparation of land/soil before cultivation
2. Steps involved in land/soil preparation
3. Pot filling for cultivating a crop either in a plot of land or a terrace garden

**Concept**:

Ploughing, Levelling, Manuring, soil preparation for terrace gardening

**Precondition for this OER: It is advisable to complete “Lesson 1 Soil” or before learning this lesson.**

**Class-Age Group** : 14 +

**Land Preparation**

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**Productive task-**

1. Understanding a need for preparation of land/soil before cultivation
2. Steps involved in land/soil preparation
3. Pot filling for a terrace garden

**Productive task objective -**

* **After going through this unit students will be able to demonstrate the land/soil preparation for plot/land/terrace garden.**

**Introduction-**

Soil preparation is one of the most important steps to have a successful cultivation. The best garden soil is fertile, well drained yet retains moisture, and gets enough air circulation which is needed for healthy roots.

Basic steps involved in soil preparation:

* **Ploughing :**

The process of loosening and upturning the soil using plough is called ploughing.

* + Why ploughing is needed?

There are molecules of air present in the soil particles. The size of soil particles affects the air-holding capacity of the soil. This air present among the soil particles is essential for respiration of roots of plants and soil organisms. You must have observed gardener working in the garden upturning the soil. He does that to loosen the soil in order to increase the air among the soil particles.

It up-root or pull-ups the unwanted plants growing in the field.

It helps uniform mixing of fertilizers with soil.

This process also helps to break the soil lumps into small particles.

* + Tools used to plough
* Iron plough
* Wooden plough
* **Leveling**

It is a process for ensuring that the depths and discharge variations over the field are relatively uniform and, as a result, that water distributions in the root zone are also uniform.

It provides a slope which fits a water supply. Soil is naturally removed by the action of water or wind. It is known as soil erosion. Leveling helps to prevent that.

* + Tools used for leveling
	+ Animal-driven
	+ Tractor driven leveller
* **Manuring :**

This is the final process in the soil preparation, it helps to supply all the nutrients to the plants required for their growth. Note that to determine which fertilizer or manure to be added in the soil it is important to know which nutrient soil, is lacking.

Manures are plant and animal wastes that are used as sources of plant nutrients. They release nutrients after their decomposition. The art of collecting and using wastes from animal, human and vegetable sources for improving crop productivity is as old as agriculture.

Naturally occurring or synthetic chemicals containing plant nutrients are called fertilizers. Manures with low nutrient, content per unit quantity have longer residual effect besides improving soil physical properties compared to fertilizer with high nutrient content.

* + Tools used for manuring :
		- * Manuring by drill or manually

So far, we have seen how to prepare a land or plot for cultivation. Next topic covers, how to prepare soil for Terrace gardening.

* **Soil preparation for terrace gardening:**

Vegetable prices are soaring either due to shortage of rains or due to excess rains and other factors like transportation etc... On the other hand presence of sewage (dirt) and heavy metal effluents in water used for irrigation purposes and chemical pesticides make the yield unfit for human consumption. Additionally, with the pressure on farmlands and its rising cost in the urbanisation process, there is hardly any space to have a garden. This is where terraces come into the picture.

A 9" thick soil layer on the terrace is enough to support plants, provided adequate waterproofing has been done to the terrace. However, growing plants in pots has become more popular as it requires less soil, points out B.N. Vishwanath, a former professor with the University of Agricultural Sciences, Bangalore. Any container that allows drainage of water can be used to grow plants, Dr. Vishwanath suggests.

The main inputs in terrace gardening are the container (pot), soil (preferably red), sand, compost and plants. Select clay pots of 12" inner diameter

* **Selecting a pot or a container:**

Basically container/pot is an object which can hold water and soil and other ingredients. Following are the few examples : Oil can, a milk crate, a good thick UV treated plastic grow bag, 2/5/10 liters or more water bottle/can, used paint buckets (but make absolutely sure all the paint inside is scraped off).

* **Pot filling :**

Plants need nutrition to grow. We don’t survive only on water or one particular type of vegetable; the same goes with plants. You have to fill the pot with the ingredients which can provide nutrition to your plants.

* **Drainage hole -** Ensure that the pot or container has a drainage hole at the side. Before filling the pot with soil, keep two to three small pieces broken old pot on the side of hole, so that water is properly drained, but soil is not washed away.
* **Soil type -** For growing vegetables in pots right selection of soil plays very important part. Vegetable gardens soil should be loamy (Soil composed of a mixture of sand, clay, silt, and organic matter)soil rich in humus (A brown or black organic substance consisting of partially or wholly decayed vegetable or animal matter that provides nutrients for plants and increases the ability of soil to retain water). Soil should contain some amount of sand to absorb water and keep the soil porous for well aeration. The vegetable garden soil should not contain stones and should not be acidic. The soil should be able to hold water and earthworms.
* **Manures -** For growing vegetables in pots your must add adequate proportion of leafy manures which will help the vegetables plants to grow well. Leafy manures will keep the soil rich in humus and help earthworms to live in the soil. You can use kitchen waste, dried leaves, cow dung, and more. The process of decomposition takes about 6-8 weeks. When this breaking down process is done with the help of a specific breed of earth worms (common name: Red Wiggler; scientific name: Eisenia fetida or Eisenia andrei), the end result is called [vermicompost](http://en.wikipedia.org/wiki/Vermicompost). This is one of the most important items, that makes your garden organic. On an average, compost costs approximately Rs. 4 to Rs. 25 a kilo.
* **Other manures**

Cow/sheep/goat Dung – You can use dried cow dung directly. Dried cow dung is sold in the form of cakes; imagine it to be a thick papad. On an average you get it for about Rs. 2 -5 per piece. Sheep/goat manure is considered to be very rich in nutrients.

[Neem](http://en.wikipedia.org/wiki/Azadirachta_indica) oil/powder/cake - The Neem tree is considered to be very sacred in India. Its oil, combined with water, is used to protect plants from insects. After the oil is extracted from the seeds, the leftover is the cake. This cake is later converted into a powder form. It is used while preparing the potting mix, as it helps to avoid root based infections. Cake is also used, but it tends to be very hard and you have the extra manual effort of breaking it down into smaller pieces. Neem oil costs about Rs. 150 for 250 ml, Neem cake about Rs. 40 per kg, and Neem powder about Rs. 20 per kg.

Video Links

<http://www.youtube.com/watch?v=UmXgPXafoPo>

<http://www.youtube.com/watch?v=HNz8IRnEMx4>

**HPNPDL Session –**

1. Do an experiment of pot filling
2. Find out which type of manure is required for the soil in your area?

***Summary –***

***What we have learnt –***

* Important steps in soil preparation – Ploughing, Levelling and manuring
* Need of Ploughing, Levelling and manuring
	+ uproot or pull-ups the unwanted plants growing in the field
	+ It helps uniform mixing of fertilizers with soil
	+ It provides a slope which fits a water supply
	+ Helps to break the soil lumps into small particles.
	+ It helps to supply all the nutrients to the plants required for their growth.
	+ Pot filling for garden terrace.