

## Pit Filling Method for Tree Planting

Tree planting is an important activity in wasteland development programmes. The success of these programmes naturally depends on the survival and growth of trees. The main requirement for survival is water during the first two dry seasons after field planting. Several methods, such as pot irrigation and drip irrigation, are available for saving water and ensuring better survival rates. Nevertheless, satisfactory survival and growth are the main challenges encountered in wasteland development programmes.

Moisture, nutrition and aeration are essential for successful tree establishment. The method described below for pit filling minimises water evaporation and nutrition losses and ensures satisfactory soil aeration. Hence it is useful for establishment of fruit orchards on slopy and degraded lands.

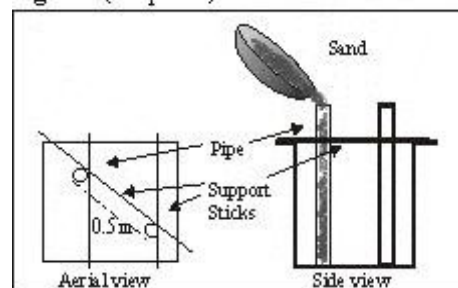
The following are the steps involved in this method.

1. Dig a pit of 1.0 x 1.0 x 1.0 m.
2. Install columns by placing two PVC pipes, bamboos or cylinders of 10-12 cm diameter in the pit as shown in Figure 1. The columns should be about 0.5 m apart.
3. Fill the pipes with river sand up to the soil surface level.
4. Fill the pit with crop waste, soil, compost, etc.
5. Apply a small quantity of water around the pipes and compact the pit again.
6. Gently remove the pipe and mark the places with sticks so that they can be easily located
7. Fill in a 10 cm layer of sand on top.
8. After the tree is planted in the middle of the pit, pour a little water on the sand columns.

Sand columns can be installed before planting the tree as well as in existing orchards.

The main benefit of this method is the rapid movement of water to the root zone. This reduces the possibility of water spreading to the soil surface and resulting in loss of evaporation. The sand column also helps in improving soil aeration and prevents water logging. The upper sand layer serves as a watering mulch, minimising evaporation and weed growth. The overall outcome will be the longer watering intervals and greater economy in the use of water

**Figure 1 (Steps 1-3)**



**Figure 2 (Steps 4-7)**

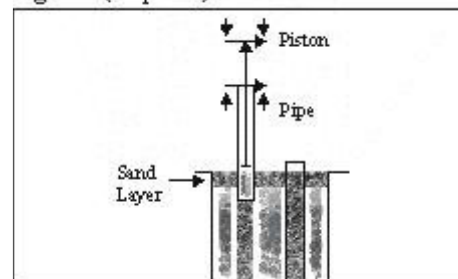
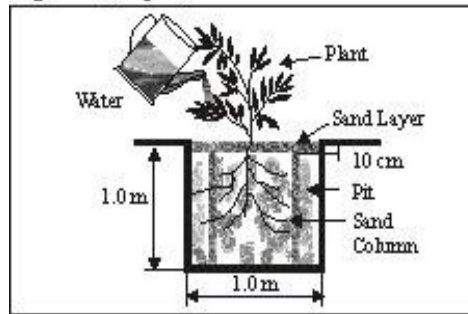


Figure 3 (Step 8)



## Field Experience

This method of pit filling was tried out in Amla (*Emblica Officinalis*) orchards in Udaipur district of Rajasthan. Selected orchards were in a rain fed area and received protective irrigation during summer. Fertilisation and other management practices were the same for all the trees, but 10 trees in each selected orchard received the same columns in the fourth year. A year later, amla trees installed with sand columns showed higher growth and yield than others as indicated in the table below.

Perticulars	Plants without sand column	Plants with sand column
Growth	3 to 4 shoots per tree	10 to 15 shoots per tree
Canopy	Sparse	Dense
Yield	10 to 15Kg./tree	30 to 40 Kg/tree
Fruit colour	Reddish, 1.0-1.5 cm in diameter	Pale yellow, 2.0-2.5cm in diameter