

# How to Prepare and Amend a Double Dug Bed



## WHAT IS IT?

A double dug bed is a bed that is dug extra deep. The term 'double dug' comes from the fact that the bed is dug in two steps. First, the topsoil is removed and put to one side, and then the subsoil is loosened with a spade or hoe. This process results in a bed that has been dug to a depth of 40-60 cm soil.

## WHY DO WE DO IT?

Loosening the soil to this depth allows plants to grow a strong root system, so it is possible to plant crops closer together within the bed. If double dug garden beds are protected from compaction through the use of pathways, and protected from erosion through the use of mulches and living plants whenever possible, then they do not need to be redug for many years.



## TERMS USED

**Contour:** The contour of the land refers to the points within the landscape that are all at an equal elevation. An A-frame can be used to mark these points and join them into a line, which can be used to dig a water harvesting structure that is "on contour". By being on contour, the water is encouraged to infiltrate into the soils rather than running downslope

**Soil amendments:** Any materials added to soil to improve its fertility, water holding capacity, or structure. For example, compost, organic material, fertilizer plants, charcoal dust, or green mulch. Most effective when chopped or shredded to speed up decomposition

**Subsoil:** The layer of soil under the topsoil.

**Swale:** A ditch dug on contour, with a berm on the downslope side created with the soil from the ditch. Swales are used to capture rainwater and should be placed where they can slow down water that is damaging the landscape as it runs downhill. The water that is collected in a swale can be used for a productive purpose, such as in a permagarden.

**Topsoil:** The uppermost layer of soil. This layer has the highest concentration of organic matter and biological activity.

# Prepare and Amend a Double Dug Bed

## METHOD

### Gather soil amendments

#### STEP 1

Gather some sacks to collect organic materials to amend the soil. Materials can include different types of manures, living and dead leaves, grasses (no seeds), crop residue, bones, shells, food scraps, charcoal dust, compost, wood chips, ash, and so on.

#### STEP 2

Gather all the materials collected next to the beds and cut or chop the bigger materials into smaller pieces.

#### STEP 3

Make distinct piles for the different types of materials near the garden bed site.



### Mark out the garden beds

#### STEP 1

Use the design map to identify where the beds should be located. Beds should be below a water harvesting swale and oriented in the same direction as the swale.

#### STEP 2

Mark out the number of beds indicated in the design. Each bed should be no more than 1 m wide, but the length and the number of beds will depend on each site. Scratch deeply in the ground to mark out the beds or use string and pegs.

#### STEP 3

Check that the garden beds are oriented along the contour and follow the shape of the swale that is upslope.

#### STEP 4

After marking out the beds, check that there is adequate space between the beds for walking pathways and room to work in the garden area.

### DETERMINE THE SIZE OF THE BEDS

The size of the beds should be determined by:

- The available space in the compound
- The amount of water available
- Level of energy the farmer is willing to commit

Permagarden beds can be as small as 1 m x 2 m and as large as 1 m x 10 m. It is however better to start smaller and add more space later once a household has the understanding and skills needed to manage a garden effectively.



### Double dig and amend the beds

#### STEP 1

Begin by marking the edge of the garden beds to double-dig with sticks and string or by marking the edges of the bed in the dirt with a hoe or shovel. Make sure that all the beds, pathways, swales and berms are measured and marked before beginning to dig. Ideally, the bed preparation would be done with multiple people to spread out the workload.

#### STEP 2

Once a bed is marked, measure 40 cm segments along the bed lengthwise. Put small stakes at the 40 cm marks or simply mark the dirt with a hoe or shovel.

#### STEP 3

Remove 20–30 cm of topsoil from the first 40 cm section, digging down until the subsoil is reached. The removed topsoil should be kept at the end of the bed.

#### STEP 4

Dig the next 20–30 cm of subsoil from the same section, loosening and digging but not removing the soil. Keep loosening the whole section until most of the larger pieces of soil have been broken up. In dry regions, the subsoil layer can be moistened with water to ease the digging process.

#### STEP 5

Add a diversity of soil amendments to the loosened subsoil. One shovel or several handfuls of each amendment is enough.

#### STEP 6

Using a hoe or shovel, mix these amendments into the subsoil.

#### STEP 7

Dig 20–30 cm of topsoil in the next 40 cm section. As it is dug up and loosened, place this topsoil on top of the subsoil section that was just amended. Make sure that all the topsoil is removed in the new section being dug.

#### STEP 8

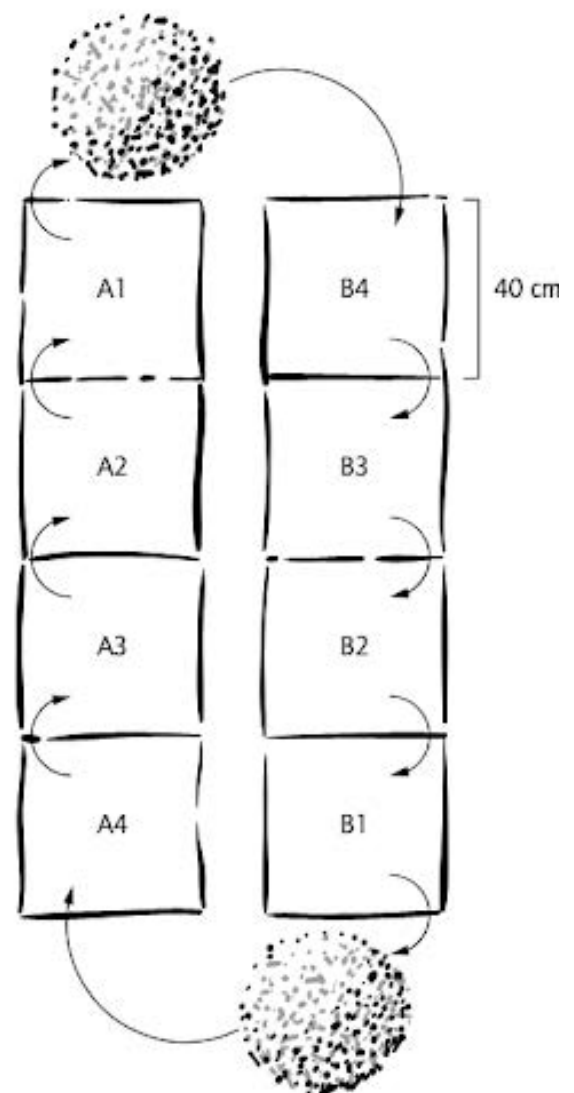
Loosen the subsoil as in Step 4.

#### STEP 9

Amend the soil, following Steps 5–6.

#### STEP 10

Repeat Steps 3–6 until the bed is complete. The saved topsoil from the start of the bed should be used to build up the bed in the last 40 cm section.



### Apply top dressing to the beds

#### STEP 1

Once the double digging process has been completed, add more organic material to the top of the finished bed. Add one shovel or several handfuls every 40 cm and work it into the top 20 cm of the bed by hand.

#### STEP 2

Pull out any rocks or large clumps and smooth out the top with a rake or hoe or by hand to create a flat planting space. The garden is now ready for planting or seeding.

#### STEP 3

Each season, check the compaction within the bed by pushing a stick into the bed; if the stick can be pushed 40-60 cm into the bed, then it does not need to be redug. If the garden bed is becoming compacted over time, consider planting a deep-rooted crop, like maize, pumpkins, or watermelons, in the bed. The roots will help loosen the soil without the need for redigging the bed. If the soil is still compacted after planting deep-rooted crops, re-dig the beds by following the steps above in the section titled Double dig and amend the beds.



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