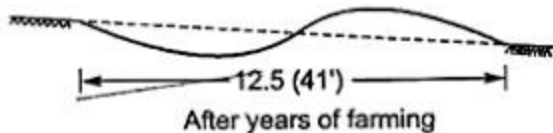


Cd = depth of cut
 h = depth of channel
 w = width



B. Modified Narrow Terrace

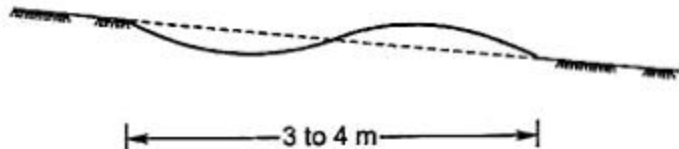


Fig. 13.8.

Definition

Bench terraces are a series of level or virtually level strips running across the slope at vertical intervals, supported by steep banks or risers.

- It is an engineering soil conservation practice
- It is also called bench terracing.



Objectives

- To reduce run-off or its velocity and to minimize soil erosion.
- To conserve soil moisture and fertility and to facilitate cropping operations.
- To promote intensive land use and permanent agriculture on slopes and reduce shifting cultivation

Applicability

This practice can:

- Be manage on soil having slopes up to 30 %.
- Be done where there is deep heavy clay soil rather than in very sandy soil.
- Typically not applicable for slopes of decomposed granitic material, or any significantly sandy soil, because of excessive sloughing of material and construction difficulties.

Locations and conditions for use

Bench terraces are particularly suited to countries or communities with the following macro conditions:

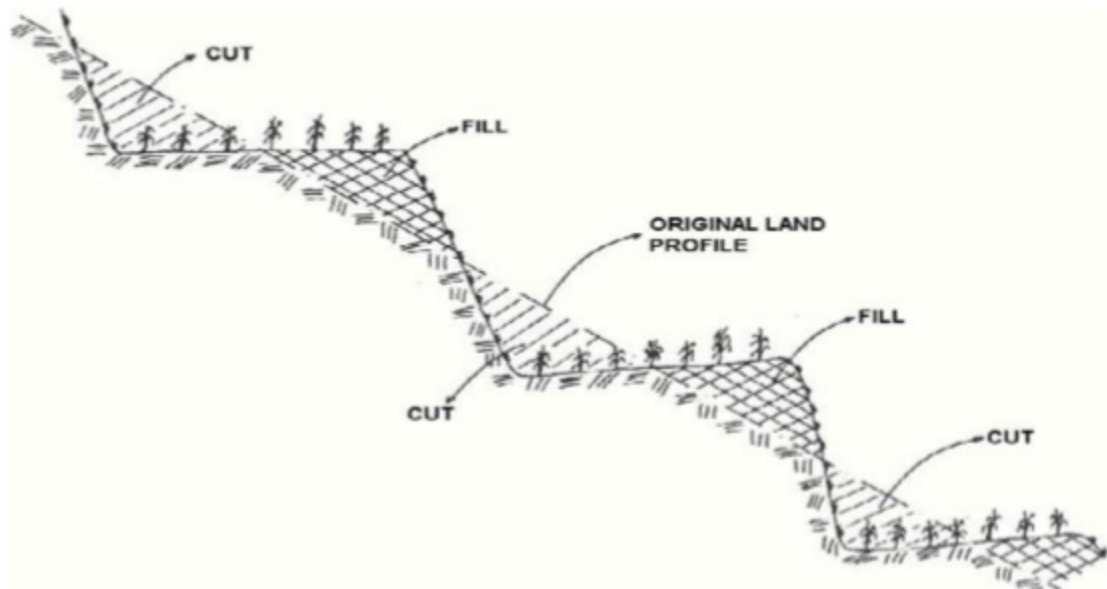
- Severe erosion hazards
- Areas with small holdings and a dense population.
- Areas where there are food shortages or high unemployment rates.
- Areas where crops require flood irrigation

Cont..

For micro or site conditions, bench terracing is suitable in the following cases:

- Where there are relatively deep soils.
- On slopes not exceeding 25 degrees.
- On sites which are not dissected by gullies and not too stony.

Cut and Fill method



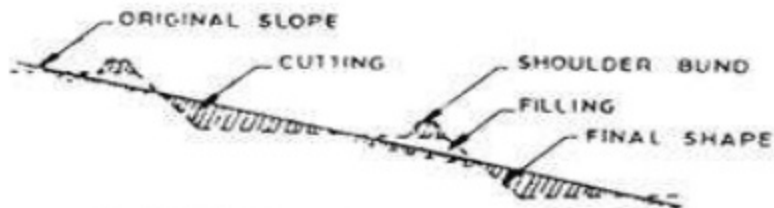
Types of Bench Terracing

1. Level or Table top bench terrace
2. Sloping inwards bench terrace
3. Sloping outwards bench terrace
4. Conservation type bench terrace

Level or Table top bench terrace

Table top bench terrace are suitable for:

- Areas receiving medium rainfall
- Areas having highly permeable and deep soils



1. LEVEL AND TABLE TOP

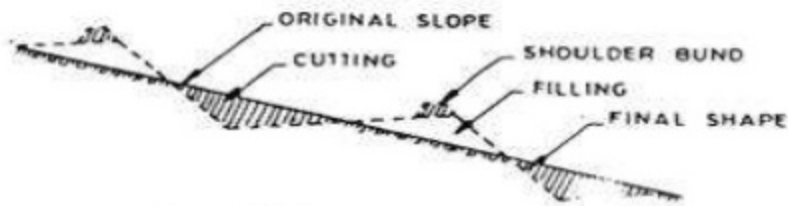


Bench terrace

Sloping inwards bench terrace

Sloping inwards bench terrace are suitable for:

- Areas receiving heavy rainfall.
- It is useful for crops susceptible to water lodging.
- Runoff towards hillside.

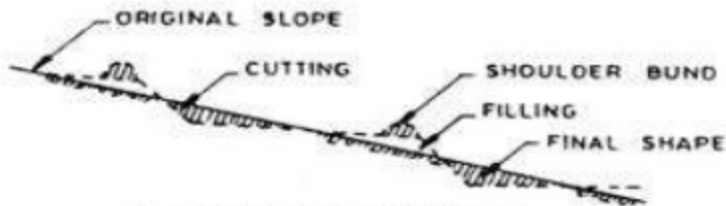


2. SLOPING INWARD

Sloping outwards bench terrace:

Sloping outwards bench terrace are suitable for:

- Areas receiving low rainfall & permeable soil of medium depth. at lower ends graded channels are provided for safe disposal of runoff



3. SLOPING OUTWARD



Conservation type bench terrace

In this type of terrace:

- Modified form of level terrace
- Use moisture of uncropped area
- Barrier is established across the land at suitable interval and the terrace is developed by pushing soil downhill and subsequent natural leveling.



Advantages

- Reduces the soil erosion.
- Aesthetical value
- Intensive land use.
- Economically beneficial.
- Availability of food for local area.
- Flood chances can be reduce.
- Improves the condition of the slope for plant establishment.
- Reduces runoff velocities and increases infiltration.

Disadvantages

- Highly labor demand and time consuming.
- Increased cost relative to alternative slope stabilization techniques.
- Can be complicated to design and install, and may fail if not properly designed and installed

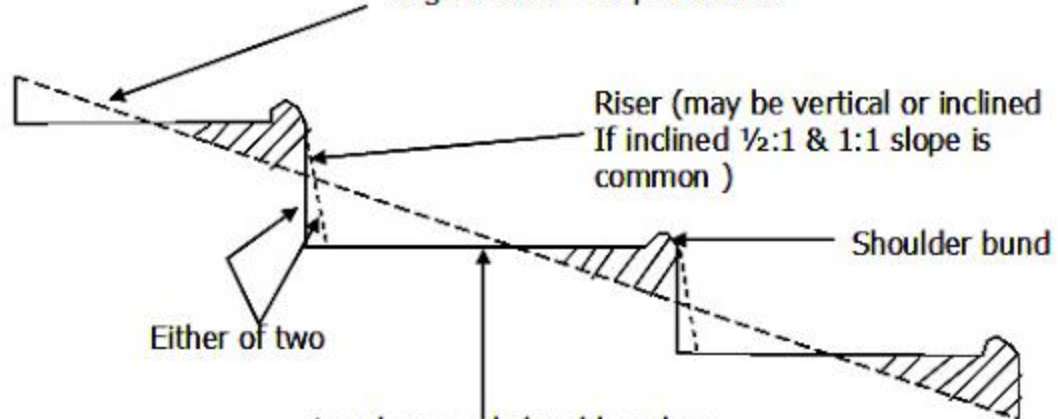
Original land – Slope 20-30%

Riser (may be vertical or inclined
If inclined $\frac{1}{2}:1$ & $1:1$ slope is
common)

Shoulder bund

Either of two

Level or nearly level benches
(may be sloping inward or outward)



Horizons

0"

O

2"

A

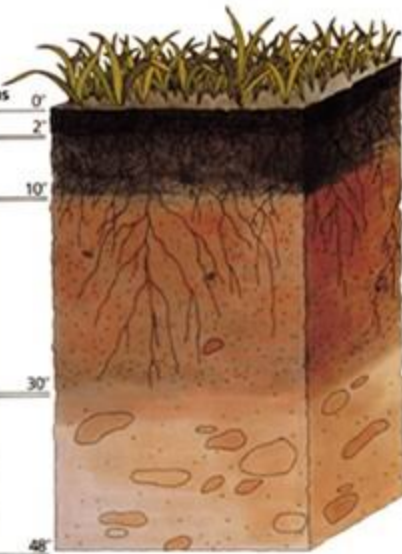
10"

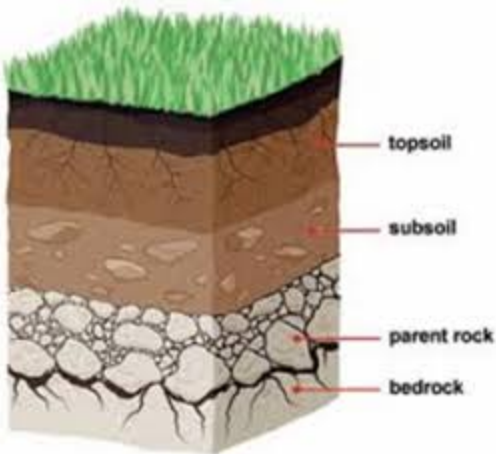
B

30"

C

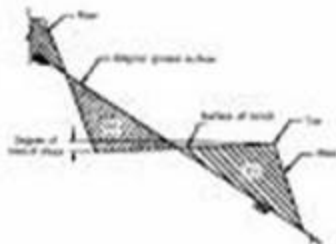
48"





Bench terraces

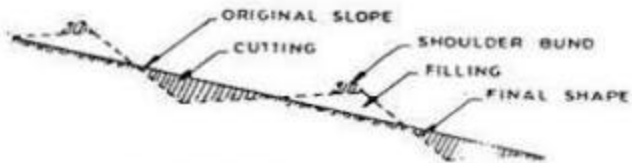
- A series of level or nearly level platform built along the contours at suitable intervals.



Sloping inwards bench terrace

Sloping inwards bench terrace are suitable for:

- Areas receiving heavy rainfall.
- It is useful for crops susceptible to water lodging.
- Runoff towards hillside.

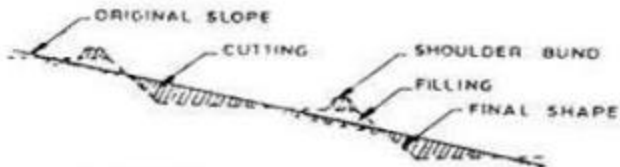


2. SLOPING INWARD

Level or Table top bench terrace

Table top bench terrace are suitable for:

- Areas receiving medium rainfall
- Areas having highly permeable and deep soils



1. LEVEL AND TABLE TOP