

Terraces

BENCH TERRACES

Bench terraces are level or nearly level steps constructed on the contour and separated by embankment known as risers. They can be formed by excavation or developed from a fanya juu.

Terrace.

Main function of the bench terraces are:

- Control of erosion by reducing the slope of the cultivated land.
- Increasing the infiltration of rain water
- Eases farm operation like weeding, spraying etc.
- Keeps soil fertility (no erosion)
- Allows improved water management (basin irrigation)

Disadvantages of bench terraces as compared to the fanya juu is more labour intensive.

Bench terraces can be used in areas with:

- Slopes up 55 percent (30°)
- Deep soils (minimum soil depth 1.5 meter)
- Stable soils (clay loam, silty clay)

Risk:

Construction of bench terraces on steeper slopes than 55 percent and in areas with shallow soil can lead to landslides due to the water pressure of infiltrated rainwater.

CONSTRUCTION OF BENCH TERRACES

For the design and construction of bench terraces, skilled labour is required. In the areas where TIP is operating, Village technicians are trained in construction of bench terraces.

Construction of bench terraces include the following steps:

After the construction, the embankment have to be stabilized with grass. In humid or sub-humid areas elephant grass (or napier grass) is often preferred

farmers since it produces lots of fodder. In semi arid areas Guatamala grass is often used.

FANYA JUU

A Fanya juu terraces is made by digging a trench and throwing the soil uphill to form an embankment. After some years the Fanya juu develops into outward sloping bench terraces.

The trench can be used for rainwater harvesting.

Farmers plant banana trees or other useful trees in the trench.

Advantages in comparison to bench terraces

- Labour requirement is less
- Applicable in areas where the soil depth is too shallow for leveled bench terraces

CONSTRUCTION OF A FANYA JUU

1. Laying out pegs the contour
2. Digging trench on the contour and throwing the soil uphill
3. Stabilizing of the embankment by grasses

MAINTANANCE

- After heavy rain, the embankment have to be checked for breakage and any damage should be repaired immediately
- Cutting grasses on embankment (the grass can be used as fodder) If grasses become too long it may harbour pests or compete with crops.
- Desalting of the trench to maintain the water storage capacity. The silt can thrown onto the embankment.

STONE TERRACES

Stone terraces are level or nearly level steps constructed on the contour and separated by embankments known as risers. Actually they are the same as bench terraces except that the riser is constructed by using stones.

Main function of the stone terrace are the same as for bench terrace:

- Control of erosion by reducing the slope of the cultivated land.
- Increasing the infiltration of rainwater

Main advantages as compared to the normal bench terrace are:

- It can be used on steeper slopes
- It can be used in areas with a more shallow soil
- It is a more permanent structure if well maintained
- It is self - stabilizing

Disadvantages as compared to bench terraces are:

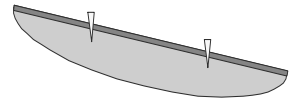
- Highly labour intensive
- Only applicable in areas where stones are available

Labour requirement

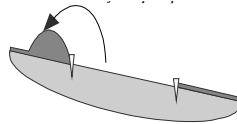
The labour requirement is like the construction of bench terraces plus additional labour for:

- Collecting breaking the stones
- Constructing of the stone wall riser

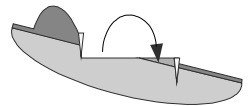
For technical advise on the construction of stone and bench terraces or fanya juu please consult village technician, TIP's district Managers or TIP head office.



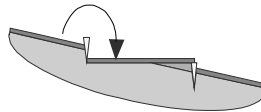
STEP 1 - Put pegs on the contour lines



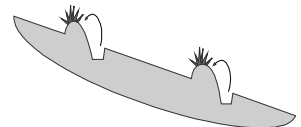
STEP 2 - Throw the fertile top soil up hill



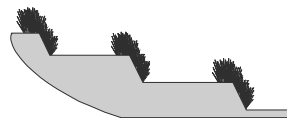
STEP 3 - Leveling of terrace



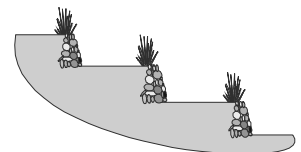
STEP 4 - Replacing of the top soil



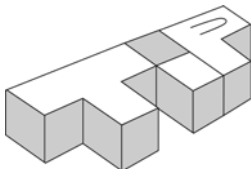
Fanya juu just after construction



Bench terraces after construction and stabilization with grasse



Stone terraces after construction



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