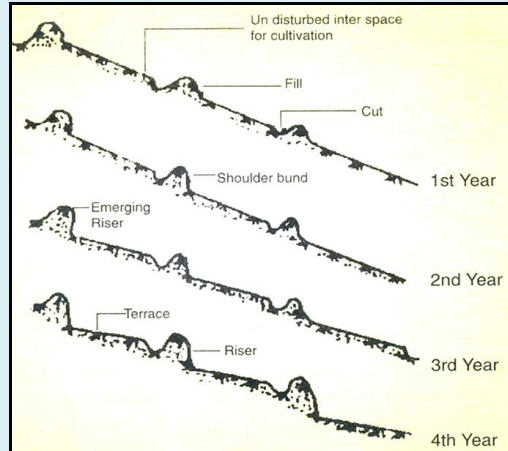


Low Cost Soil Conservation Practices for Sustainable Agriculture

Watershed, a natural drainage unit, it should be planned by optimising various use of land and water resources for sustainable production. This watershed based farming system coupled with mechanical soil conservation measure contour bunds, bench terrace, half moon terrace, grassed water way, etc. at appropriate location can retain maximum rainfall within the slope and safely disposing off the excess runoff from the slopes to foot hills with non erosive velocity.

1. Contour Bund

It can divert excess runoff during rains to grassed waterways and retain eroded soil. Parabolic channel (0.3m top width, 0.2m deep) should be provided along the contour and excavated soil is placed in the form of bund in downstream. Developing terraces through slow process with contour bunds is very effective – avoids exposure of subsoil as in bench terracing. Usual cultivation practice is continued between two bunds. With slow process of silt deposition area between the bunds takes shape of terrace in 4-8 years. Bunds require care and maintenance during first two years. Planting of economical forage grass strengthens bund.



Contour bunding for slow conversion terraces

2. Bench Terrace

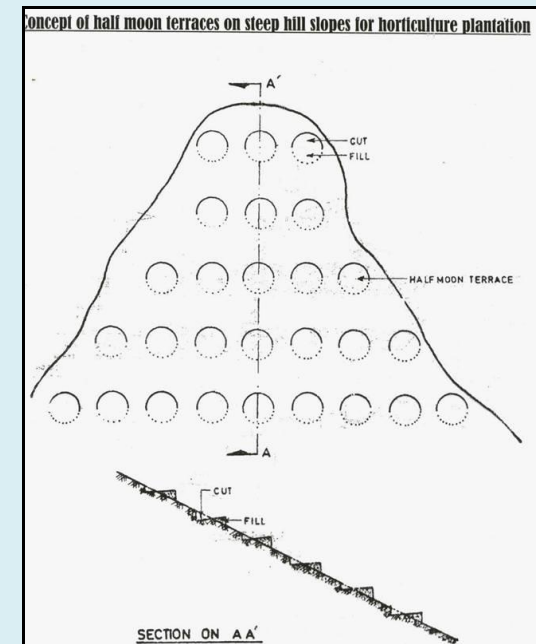
Bench terracing is flat beds constructed by earthen embankments across the slope with cut and fills method and serve as barriers to break slope length and reduce the degree of slope. It can be adopted where soil depth more than 1m and can also be developed with vertical stone walling. To maintain top soils in terraces, construction should start from the foot hills.



Bench terraces

3. Half Moon Terraces

Half moon terraces are used for planting of fruit and fodder trees in horticulture and agroforestry systems and made by cutting in half moon shape to create circular level bed having 1-1.5 m diameter. Also provides facilities for retaining moisture and easy application of fertilizers and manures for healthy growth of plants.



Half Moon Terrace

4. Contour and Staggered Trenches

It is constructed along contours having slope above 15% to prevent erosion and absorb rain water for horticulture and forestry land. It improves moisture status, water yield in springs. In case of contour trenching there

should not be break in length, it should be continuous and in case of staggered trenches it should be laid scattered with maximum length of 2-4m.



Contour Trenching

5. Grassed Waterways

It is constructed according to proper design and vegetative cover is established to protect the channel section against erosion and it is associated with channel terraces for the safe disposal of concentrated runoff. It protects the land against rills and gullies.

6. Soil Conservation for Agriculture Land Use

The system can be adopted on hill slope upto 50% gradient where soil depth is greater than 1.0m. Contour bunding at 0.5 to 1.0m vertical interval draining into common grassed waterways is an essential requirement. It is advisable to construct few bench terraces at the foot-hill portion of the hill slope. In due course of time the entire plot gets converted into benches. Such land uses are expected to retain over 90% of annual rainfall in the slope and reduce the soil loss below 2 tonnes/ha/yr.

Cost of land development: 150 man-days/ha.

7. Soil Conservation for Horticultural Land Use

Horticultural Land Use as an alternative can also be adapted. Slope of such land preferably should not be more than 100%. Soil depth must be minimum 1.0m with Contour bunds at 2m interval, half moon terrace at the fruit plant locations, grassed waterways and few bench terraces at the lower slope towards foot-hills for growing vegetable crops are essential conservation measures. Such lands are expected to retain over 90% rainfall in the slope and reduce the soil loss below 1.0 tonne/ha/yr.

Cost of land development: 108 man-days/ha.

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