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Module 4: WATER MANAGEMENT



Session 2: SPRINKLER AND DRIP IRRIGATION . WATER HARVESTING METHODS and WATER BALANCE AND STORAGE STRUCTURES



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Harvesting water:

➤ Increasing filtration:

- During strong rains, only a part of the water infiltrates into the soil.
- A considerable part flows away as surface runoff, thus being lost for the crop.
- In order to get as much of the available rainwater into the soil, the infiltration of rainwater needs to be increased.



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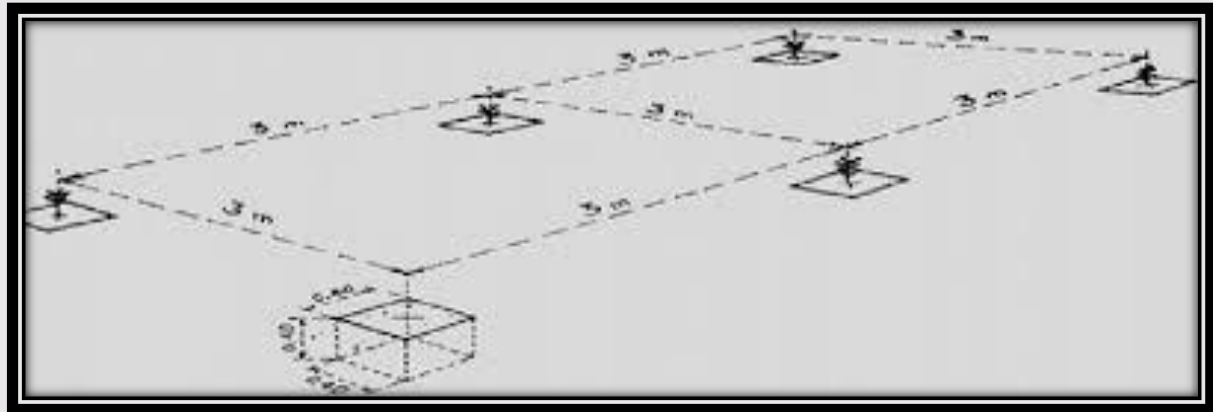
- Most important for achieving a high infiltration is to maintain topsoil with a good soil structure containing many cavities and pores, e.g. from earthworms.
- Cover crops and mulch application are suitable to create such a favorable topsoil structure.
- They help to slow down the flow of water, thus allowing more time for the infiltration.



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Planting pits

- Planting pits (known as zai in Burkina Faso and tassa in Niger) are hand-dug circular holes that collect water and store it for use by the crop.



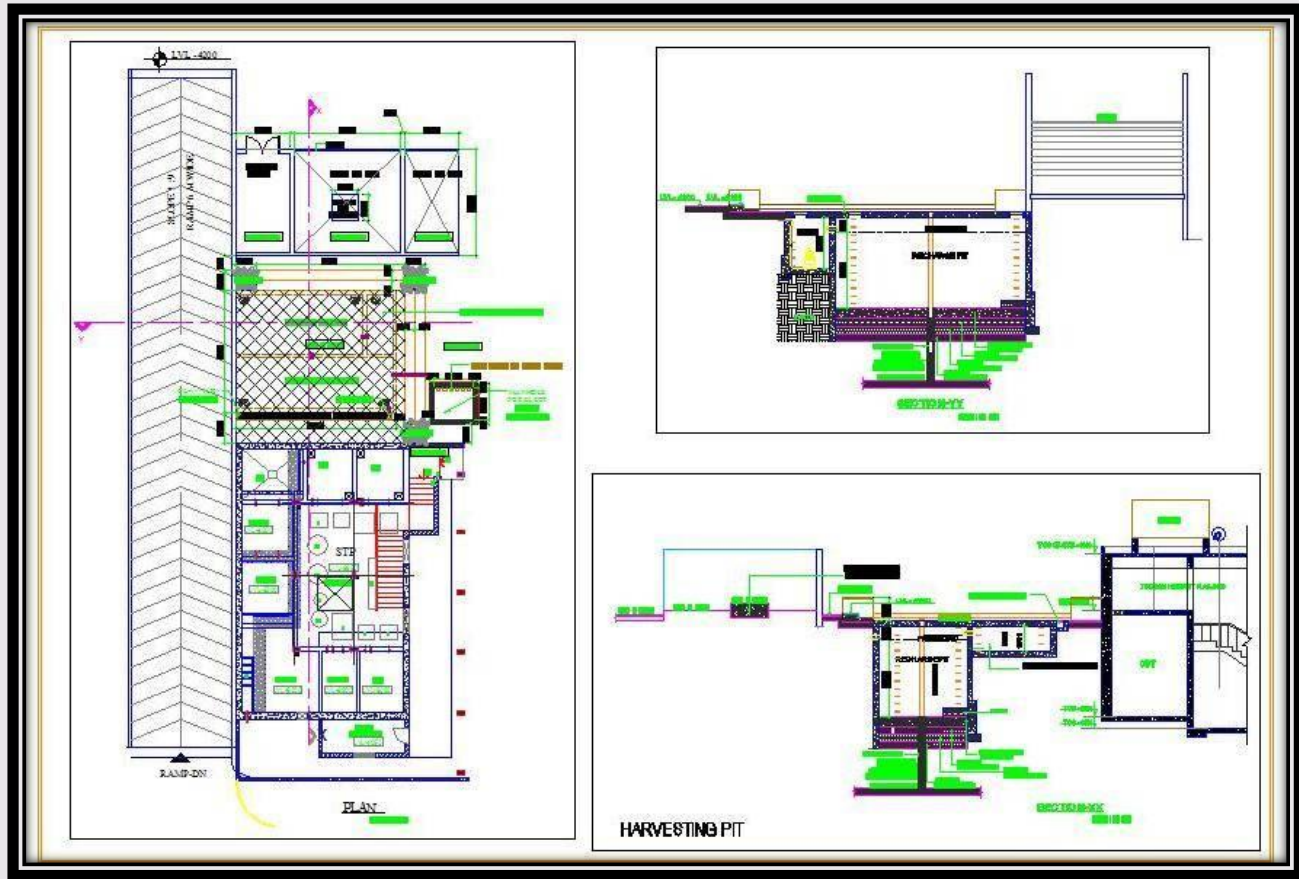
- Each pit is about 20 cm across and 20 cm deep.



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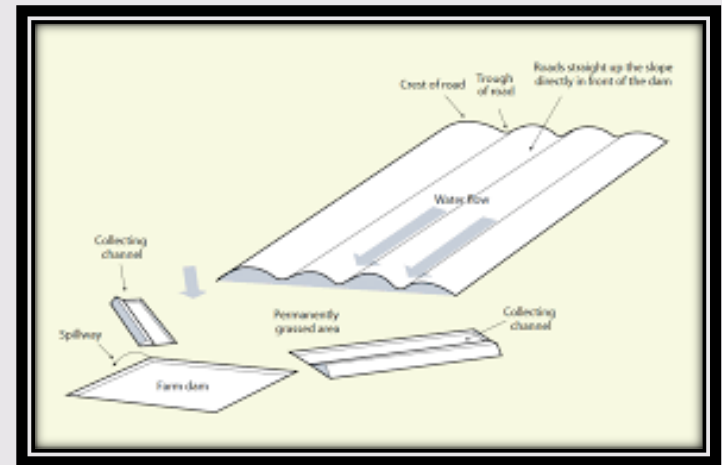




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Road catchments:



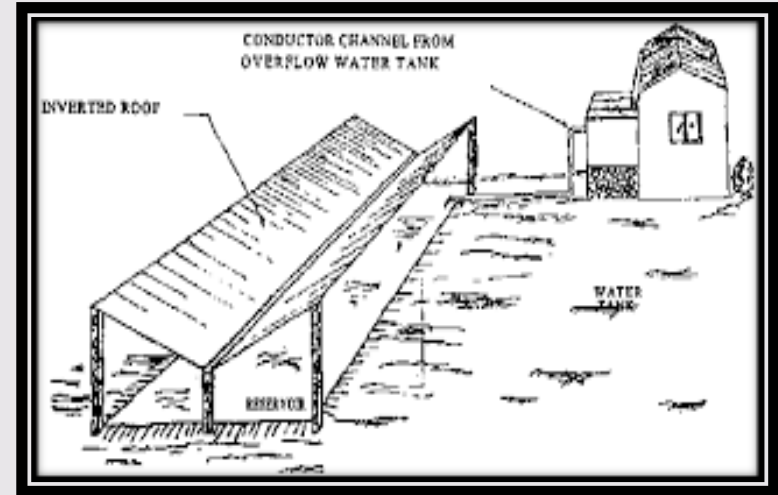
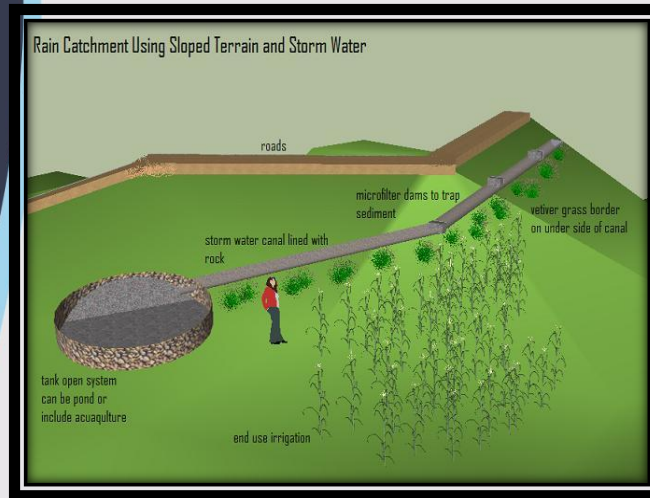
- ❖ Water from roads and from other unproductive areas such as paths and homestead compounds can be channeled onto fields.



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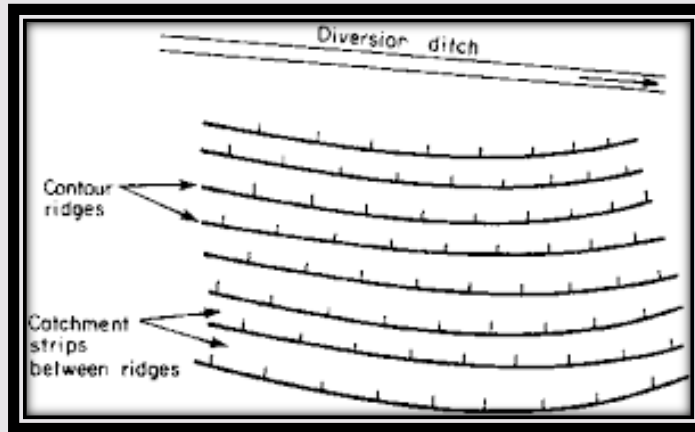
- ❖ Alternatively, special bunds can be built around fields close to the road. Another possibility is to direct the water into a pond, which can be used to irrigate crops.
- ❖ It may be possible to divert water from structures that already exist, such as the ditches below Fanyu juju terraces.



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Contour bunds and catchment strips



- ❖ In areas with low rainfall, there may not be enough water to grow a crop over the whole area.
- ❖ On gentle slopes (less than 3 percent), one possibility is to use contour bunds and catchment strips.



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- Catchment strips are areas where no crops are planted.
- When rain falls on this ground, it runs downslope and is trapped by the contour bund.





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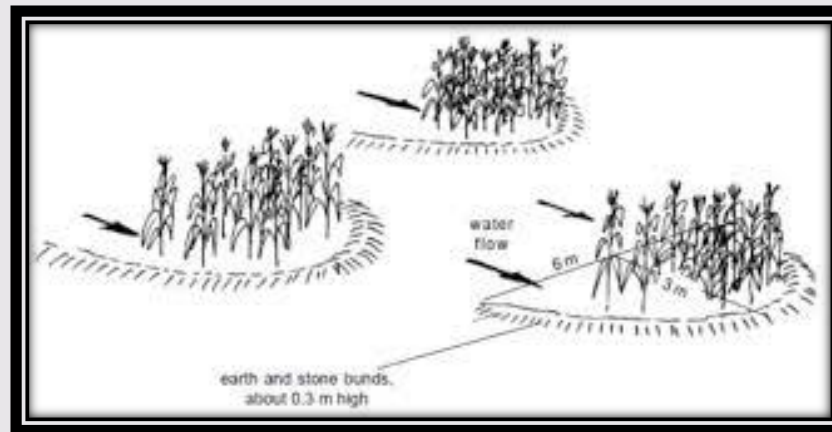
- ❖ Plant rows of crops behind the bund to use this water.
- ❖ This can produce a good yield even with very little rain.
- ❖ Mulch the cultivated areas with crop residues to prevent erosion, help water sink in, and slow evaporation.
- ❖ The picture below shows an example of a farmer in Botswana, who makes his cropped strips 0.8 m to 1 m wide a 3.3 m apart.



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Half-moon micro catchments:



- ❖ Half-moon micro catchments are small, semi-circular earth bunds.
- ❖ They are quite common in the desert margins of the Sahel, where they are called “demilunes”.



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- ❖ The half-moons catch water flowing down a slope.
- ❖ Crops such as sorghum, millet and cowpeas can be planted in the lower portion of the half-moons.
- ❖ Half-moons are helpful to rehabilitate degraded land.





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