

## Water Harvesting and It's Types

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Water is the most precious natural resource which is important to each and every organism on earth but over increasing population and decreasing water resources is one of the major challenges that India is facing. Increase in water demand has put the scientists to develop an innovative method for continuous supply and efficient use of water which is affordable enough to bridge the gap between demand and supply, as we know that it takes time to develop something new from scratch but it doesn't mean we can't adopt other practices to tackle the situation of water shortage in farming.

### What is water harvesting?

It refers to the collection of rainstorm generated runoff from a particular area in order to provide water for human, animal or crop use. The collected water can be utilised immediately (for irrigation) or be stored in reservoirs (farmponds, tanks etc.).

### Methods/technologies of water harvesting

#### 1. Watershed development

A watershed is an area of land where all of the water that falls within its boundaries drains into a common waterway, such as a river, lake, or ocean. It is also called as drainage basin. Watershed development is the process of managing and conserving land and water resources in a particular watershed area.

E.g. Check dam, Percolation pond, contour binding, vegetative barriers, bench terracing, farm ponds and percolation ponds etc.

Check dam and percolation ponds are the most commonly used methods

#### a) Check dam

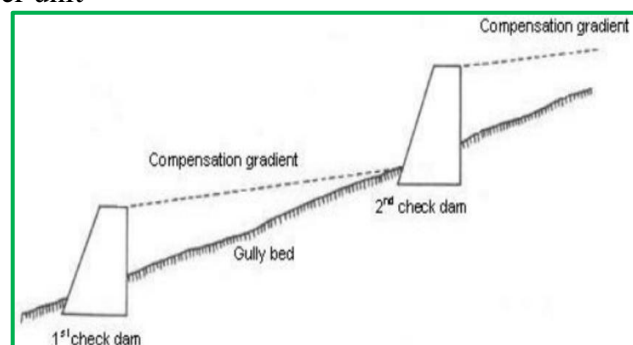
##### Salient features

Constructed on small streams and long gullies formed by erosive activity of flood water.

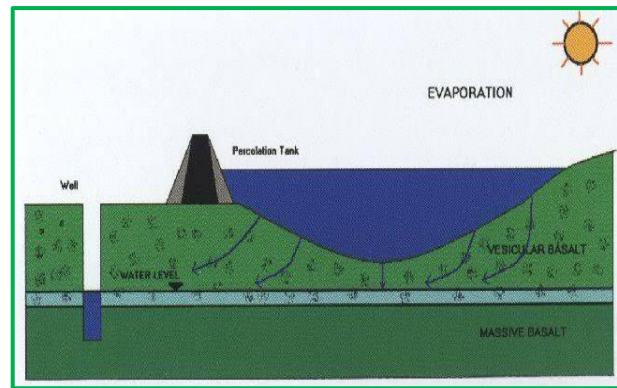
It cuts the velocity and reduces erosive activity.

The stored water improves soil moisture of the adjoining area and allows percolation to recharge the aquifers

Cost varies from ₹. 40000/- to ₹. 100000/- per unit



## b) Percolation pond



### Salient features:

It is located in soils of permeable nature.

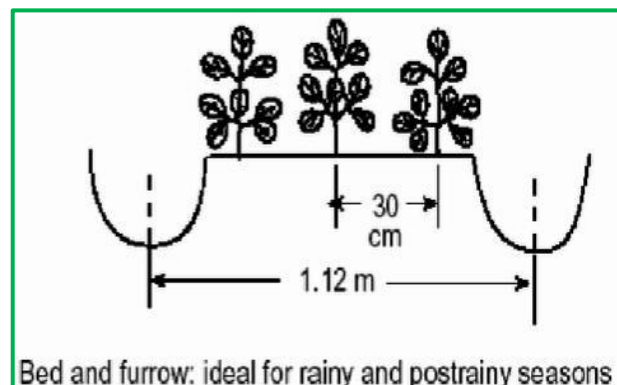
Preferable under gentle sloping stream where narrow valley exists.

Cost varies from ₹. 60000 to ₹. 150000 per unit.

### 2.In-Situ moisture conservation techniques

In-situ moisture conservation techniques are methods used to retain and increase soil moisture in place, without necessarily adding external water sources

E.g. micro catchment, contour bund, mulching, broad beds and furrows etc.



### a) Broad bed furrows

Functions : To control soil erosion and prevent moisture loss during rainy days.

General information : it is laid between the field boundaries and it is laid using either animal drawn or tractor drawn ridgers.

Cost : Approximate cost for laying beds and furrows is ₹1000/- per ha.

Salient features : Water retention, The raised beds in broad bed furrows help to retain moisture in the soil, reduces amount of water lost to evaporation and Reduced runoff

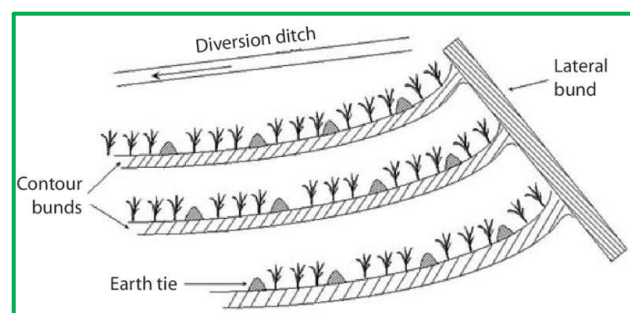
Improved infiltration: Water is more effectively absorbed by the plants.

### b) Contour bund

Functions : To intercept the runoff flowing down the slope by an embankment.

General information: It helps control runoff velocity. The embankment may be closed or open, surplus arrangement are provided whenever necessary.

Cost : Approximate cost for laying bund is approximately ₹1500/-



Salient features: Contour bund are a sustainable soil and moisture conservation measure that can be easily maintained by communities  
It can be laid up to 6% slopes.  
It can be adopted in light and medium textured soil.

### **Modern tech solutions to help farmers in water management**

**Soil Moisture Sensors** : These sensors help in monitoring the level of soil moisture. The soil moisture sensors provide real time data which can be downloaded wirelessly on computers. This data helps the farmers measure the water usage on the farm.

**Drone Monitors** : Drones can help the farmer by mapping and monitoring the :  
distribution of water : Drones can map the entire field to ensure equal distribution of water. Additionally, drones also help in monitoring various farming equipment such as sprinklers, pumps and pipes above the ground for any damage, irregularity in the water flow and more.  
Thermal imaging of crops : It is essential to keep a track of the temperature of the crops to determine how much water the crops would need. So, drones can come in handy to scan the vast acres of land for thermal data.

**Internet of Things in Irrigation** : IoT sensors can be installed in irrigation pumps to detect wear and tear, defect, leakage and more. These IoT sensors can also measure the quality of freshwater and determine whether the water is suitable for farming or otherwise.