

Roof Top Rain Water Harvesting

What is Roof Top Rain Water Harvesting

Rooftop Rain Water Harvesting is the technique through which rain water is captured from the roof catchments and stored in reservoirs. Harvested rain water can be stored in sub-surface ground water reservoir by adopting artificial recharge techniques to meet the household needs through storage in tanks.

The Main Objective of rooftop rain water harvesting is to make water available for future use. Capturing and storing rain water for use is particularly important in dryland, hilly, urban and coastal areas. In alluvial areas energy saving for 1m. rise in ground water level is around 0.40 kilo watt per hour.

Need for Rooftop Rain Water Harvesting

1. To meet the ever increasing demand for water
2. To reduce the runoff which chokes storm drains
3. To avoid flooding of roads
4. To augment the ground water storage and control decline of water levels
5. To reduce ground water pollution
6. To improve the quality of ground water
7. To reduce the soil erosion
8. To supplement domestic water requirement during summer, drought etc.

Advantages of Rain Water Harvesting

1. Provides self-sufficiency to your water supply
2. Reduces the cost for pumping of ground water
3. Provides high quality water, soft and low in minerals
4. Improves the quality of ground water through dilution when recharged to ground water
5. Reduces soil erosion in urban areas
6. The rooftop rain water harvesting is less expensive
7. Rainwater harvesting systems are simple which can be adopted by individuals
8. Rooftop rain water harvesting systems are easy to construct, operate and maintain
9. In hilly terrains, rain water harvesting is preferred
10. In saline or coastal areas, rain water provides good quality water and when recharged to ground water, it reduces salinity and also helps in maintaining balance between the fresh-saline water interface
11. In Islands, due to limited extent of fresh water aquifers, rain water harvesting is the most preferred source of water for domestic use
12. In desert, where rain fall is low, rain water harvesting has been providing relief to people

Safety Consideration

Storage in Ground Water Reservoir

1. For rooftop rain water harvesting through existing tubewells and handpumps, filter or desilting pit should be provided so that the wells are not silted.
2. Such tubewells if pumped intermittently, increase the efficiency of recharge.
3. If the ground water reservoir is recharged through, shaft, dug well etc., inverted filter may be provided.

Storage in Tanks

1. A storage tank should not be located close to a source of contamination, such as a septic tank etc.
2. A storage tank must be located on a lower level than the roof to ensure that it fills completely.
3. A rainwater system must include installation of an overflow pipe which empties into a non-flooding area. Excess water may also be used for recharging the aquifer through dug well or abandoned handpump or tubewell etc.
4. A speed breaker plate must be provided below inlet pipe in the filter so as not to disturb the filtering material.
5. Storage tanks should be accessible for cleaning.
6. The inlet into the Storage tank should be screened in such way that these can be cleaned regularly.
7. Water may be disinfected regularly before using for drinking purpose by chlorination or boiling etc.

How Much You Can Collect

Collection Efficiency

How efficiently the rainfall can be collected depends on several considerations. Collection efficiencies of 80% are often used depending on the specific design.

Rainfall Reliability.

The first step is to determine how much water would be generated from your roof area. Average monsoon rainfall is used for this purpose.

Formula:

Total quantity of water to be collected (cu.m.) = Roof Top Area (Sq.m.) x Average Monsoon Rainfall (m) x 0.8

Rooftop area Vs Rainfall wise Availability of Water for Rainwater Harvesting is given in the annexure X