

GREEN TECHNOLOGY

RAINWATER HARVESTING

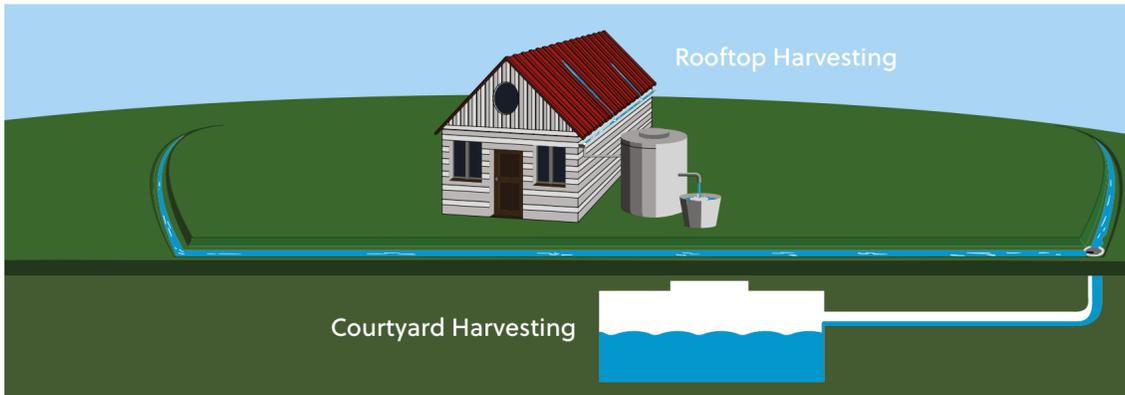
Rainwater Harvesting is a technology for the collection of precipitation from any suitable surface to be stored for later use or directly used in agriculture, domestic usages or for providing drinking water for human and animals if properly treated.

TYPES OF SYSTEMS

The four main types of rainwater harvesting systems based on the type of catchment:

1. Rooftop/ Courtyard Water Harvesting

- In Rooftop water harvesting, water is collected from the roof of an establishment and stored in a storage tank for future usage.
- In courtyard water harvesting, water is collected from surfaces that could be of rock, compacted soil, paved or covered with sheeting.



2. Micro-Catchment Systems

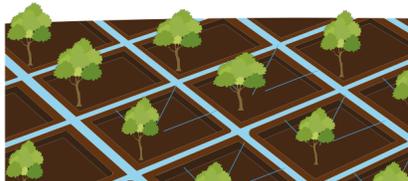
Micro-catchment systems are on-farm agricultural techniques creating holes, pits, basins, strips, bunds, terraces and others in the soil that will allow the collection of surface run-off water from the small catchment areas adjacent to the crops/plants.

Pit System (Slope <5%)



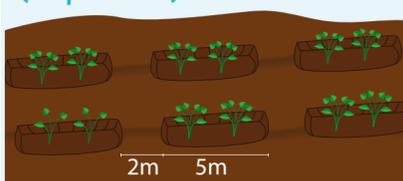
Pits are usually holes of 20 -30 cm width and 20-30 cm depth & spacing 60 cm-1 m apart.

Negarim System (Slope 1-5%)



Have a diamond shape and are limited by low earth bunds.

Vallerani-type Basins (Slope 2-10%)



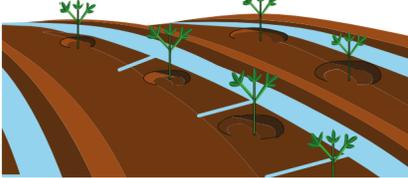
Mechanized semi-circles using a specially designed tractor plough.

Semicircular Bunds (Slope <15%)



Earth or rock bunds in the shape of a semi-circle arranged in alternation, with the tips set on the contour facing upslope.

Vallerani-type Basins (Slope 2-10%)



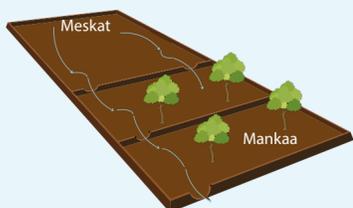
Parallel earth bunds subdivided to micro-catchment by small earth strips perpendicular to the bund

Runoff Strips (Slope <5%)



Farm is divided into strips along the contour with upstream strip used as water catchment & downstream strip planted with crops

Meskat (Slope 2-15%)



Rectangular shaped basin with water runoff flowing from one Mankaa to the other through spillways

Contour-Bench Terraces (Slope 20-50%)



Bench terraces are a flat or slightly sloping beds

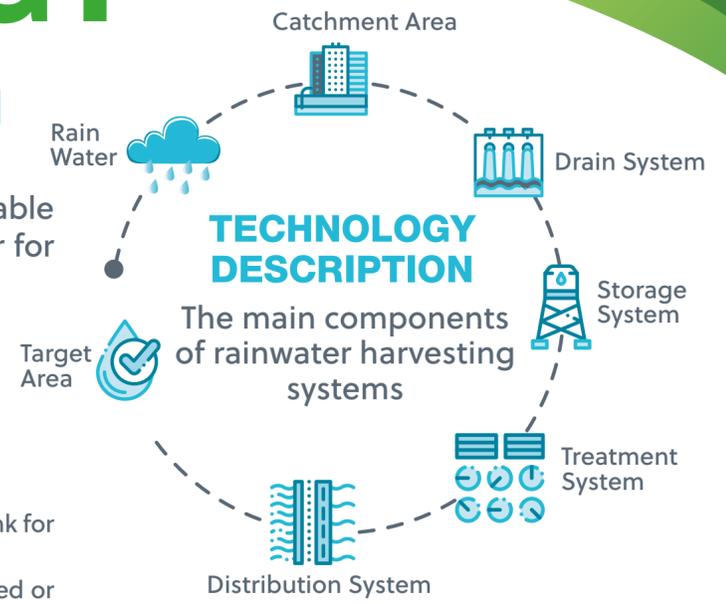
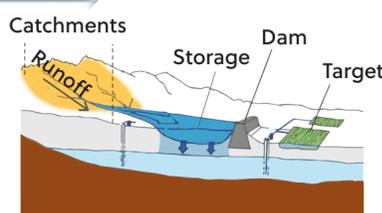
Eyebrow terraces (Slope 20-50%)



Micro-basins in the shape of an eyebrow, often made from soil & stones

3. Macro-Catchment Systems

Macro-catchment systems divert water from natural catchment such as hillsides, forests or mountain slopes to cultivated fields or storage facilities such as ponds, small dams or reservoirs.



4. Floodwater Harvesting Systems

Floodwater harvesting is the collection and storage of a temporary water channel that flows from a catchment area of several kilometers long and with an area greater than 200 ha. It can be an off-stream bed system diverting water to adjacent fields, or within streambed system storing water within the channel bed (Jessour system)



Applications

Rainwater harvesting applications include providing water for:



POINTS TO CONSIDER

- End use of water affects the choice of rainwater harvesting system design.
- Amount of rainfall and distribution are limiting factors for this technology.
- Storage areas may possibly attract mosquitoes and other infestations.
- Initial investments is needed for some large systems for construction and maintenance requirements.

ADVANTAGES

- Provide water for dry-land areas and help overcoming dry spells.
- Provide a supplementary water source and reduce pressure on conventional water resources.
- Reduce soil erosion and compaction risks
- Reduce precipitation run-off and extreme events such as flooding
- Present a flexible technology adapted to various situations and budgets
- Provide simple system construction, easily adapted, operated and maintained by farmers