Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Empowered lives. Resilient nations.

On behalf of: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany

RAINWATER HARVESTING

Climate Smart Agriculture (CSA) Brief No. 5 for Agricultural Field Officers

Rain Water Harvesting for irrigating a farm in Mardi Gras, St George

Did you know?

Rainwater Harvesting (RWH) is an excellent water conservation practice. In addition to augmenting the water supply, collecting rainwater can also prevent or reduce surface runoff and soil erosion.

Challenges

The negative impacts of climate change will lead to changes in rainfall patterns, with a predicted reduction in overall annual rainfall but, an increase in erratic heavy rainfall events. The distinction between the wet and dry seasons has become less prominent. Coupled with an increase in hot days and nights and increased rates of evapotranspiration, longer and more severe drought risks are expected. This ultimately results in concerns for water availability for agricultural purposes. Water is one of the most essential resources in the agriculture sector, especially since crops are mainly rain-fed in Grenada.

What is Rainwater Harvesting?

Rainwater harvesting is the process of collection and storage of rain water from a surface (a roof or a floor slab) through a conveyor system (guttering, drain or pipes) to a location where it is stored (tank) for future use. Rainwater harvesting (RWH) is a practice that is used to provide additional water, particularly during the dry season. **In addition to augmenting the water supply, collecting rainwater can also prevent or reduce surface runoff and soil erosion. It is an excellent water conservation practice.** This practice is common in Carriacou and Petite Martinique.

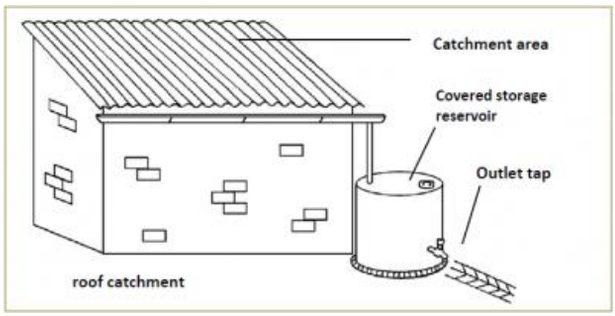
Benefits of rainwater harvesting

- ✓ Rainwater is free from chlorine or any other chemicals used in pipe- borne water
- ✓ It is an excellent source of water for irrigation and has multiple uses
- ✓ Rainwater is free to use
- ✓ It reduces the usage of ground water and surface water
- ✓ It reduces surface runoff thus reducing erosion and protecting the top soil
- ✓ Collection is easy to establish

Simple system using a barrel, New Hampshire, St George

Implementation

A rainwater harvesting system typically consists of the following elements:



Schematic of a typical rainwater catchment system (Source: UNEP IETC, 1998)

- ✓ A collection surface – such as the roof of a house or shed
- ✓ A conveyor system – guttering, down pipes, sprouting that leads the rainwater from the collection system to the storage container.
- ✓ Filters and cleaning traps – these keep leaves and other unwanted particles from getting into the storage container. The trap is useful for cleaning any particles that escaped and went through the conveyor system.
- ✓ Storage Container (natural reservoirs, tanks) – the container must be sealed on all sides (water tight). It can be below or above ground or part of both. It can vary in size, shape and composition. It can be also be a pond.
- ✓ An overflow pipe – this provides a channel for getting rid of excess water in the event that the container is filled. This will also prevent busting of the walls of the container.
- ✓ Distribution system – pipes used to transport water from the storage container to the location where it is used (the farm). The system can be powered either by gravity or a mechanical or electrical pump.

Storage container:

Factors to consider:

- ✓ It is very important to evaluate where to locate your storage container:
  - Location of the farming area in relation to the location of the collection point and the distance between the two.
  - Degree of slope of farm land.
  - Is the collection point lower or higher than farm?
  - Can you use gravity or do you need a pump?
- ✓ Size, shape and composition of container (from water tanks to barrel or jugs).
- ✓ Costs of construction of storage container

For more information visit: http://www.caribbeanrainwaterharvestingtoolbox.com/

Guttering system connected to high-capacity water tank, Carriacou

Step-by-step process:

- Identify a nearby surface that can be used as the collection surface. It can be the roof of the farm house, or a nearby roof or any impervious surface e.g. a sheet of galvanize placed over a container or pillars. Any roof/surface can be retrofitted with guttering for the collection process.
- Connect the guttering to sprouting or down pipes that will channel the water to the storage container. The pipe must be connected to the top of the container to allow it to be filled to its maximum.
- Attach the overflow pipe to the container.
- Attach the distribution line at least three to six inches (3'' to 6'') from the bottom of the container. This is to allow for sediments to settle to the bottom of the container in order to avoid blockage of the distribution line. Ideally, the distribution line should be a drip irrigation line to make the most efficient use of the rainwater.

GOVERNMENT OF GRENADA:
Permanent Secretary
Ministry of Climate Resilience, the Environment, Forestry, Fisheries, Disaster Management and Information
Tel: +1-473-440-2078
Email: ps@climateresilience.gov.gd

GOVERNMENT OF GRENADA:
Chief Land Use Officer
Ministry of Agriculture and Lands
Tel: +1-473-440-2708
Email: agriculturegrenada@gmail.com

GIZ:
Dieter Rothenberger, Head of GIZ/ICCAS
Ministry of Climate Resilience, the Environment, Forestry, Fisheries, Disaster Management and Information
St. George's, Grenada
Tel: + 1-473-534-8000
Email: dieter.rothenberger@giz.de

To get all the latest news like "ICCAS Project" on

The Programme is implemented by the Government of Grenada, the German Development Cooperation (GIZ) and UNDP and funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under the International Climate Initiative (IKI).