

# Mechanism for Direct Rain Water Collection for Agriculture and House Hold Purpose

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**Abstract-** Rainwater collection, the small-scale collection and storage of runoff from irrigated agriculture, is recognized as a sustainable strategy for ensuring food security, especially in monsoonal landscapes in the developing world. The capturing and storing of rainwater goes back thousands of years to when we first started to farm the land and needed to find new ways of irrigating crops.

The roof water collection or harvesting projects which can be solved the problem of water. But the some agricultural problems which cannot be solved and also some countries which can be also suffering from the water problems. In our project the water which can be stored in tank and the tank which can be closed there is no contact with the any dust, dirt material, etc. and the water which can be collected with the help of mechanism. We can be construct the project. In the project we can be use a either plastic or either ceramic tank and the mechanism which can be placed at the top of the tank and the pipe filter or drinking water filters which can be placed and the man hole or supply line which can be provided and all the links which can be assemble at the end.

The mechanisms are RACK and PINION mechanism [operating mechanism] and inverted umbrellas [collecting mechanism]. The umbrella which can be made by the plastic, fibre, aluminium, and other material. In the umbrella the metal rods which can be provided the outside of the umbrella and the rods which can be connected to the rack and pinion .The pinion is fixed and the rack which can be moves in upward and downward direction. Due to this motion the mechanism which can be opening and closing and at the Centre the water which can be collect at the tank with the help of tube or pipes and the water which can be used for agriculture as well as house hold purpose.

## INTRODUCTION

In previous thousands year the water which can be collected by the river and lake in the ponds for

agriculture. But the after hundred years the modification on this idea and the rain water harvesting projects which can be invented. The roof and the tank water harvesting project which can be solve the some amount of water problems, but the population which can be increased day by day and the water which can be reduced day by day and lots of countries which can be suffers from the water problem. In the rainy season the farmers which can be make a ponds in their crops and collect the rain water for agriculture, but the ponds or the water collection place are open in a atmosphere, then the some amount of water which can be vaporized and the also converted into the dirty water because the water which can be open in the atmosphere. In the dirty water the lots of bacteria which can be produce and create the lots of diseases and which is harmful for human health and also dengue diseases can be also produced by this water.

### 1. Rain water collection system

In the rain water collection the simple technique of catching and holding rainwater where it falls. Either one the water which can be stored the water which can be used for agriculture as well as house hold purpose. It is the ideal for areas where there is inadequate ground water supply or surface resources. The collected rain water which can be used for housing portable or non portable uses. The portable uses includes drinking, bathing, cooking, and dish wash.

### 2. Components of rain water collection system

The main component of the water collection system is tank or water collecting mechanism. The tank which can be made by the ceramic or either plastic and the mechanism which can be placed at the top of the tank. The inverted umbrella which can be used to collect the water

and the umbrella which can be connected to the mechanism. The umbrella made by plastic, fibre, and either aluminium and other material. The outside of the umbrella the metal rods which can be connect same as the inverted umbrella, the outside rods which can be connected to the RACK and PINOIN mechanism .The pinion which can be fixed or rack which can be moved and give the opening, closing, upward and downward motions.

3. Main purpose of the system

The main purpose of the system in which the water is collect in the tank and the water which can be used for agricultural as well as house hold purpose. The water which can be collect in tank is in pure form and which used for drinking. The water which can be collect in tank in rainy season and used in summer and solve the problem of drinking water and also the agricultural water supply problem.

LITERATURE SURVEY

1. Nissen Peterson[1999]

Nissen-Peterson (1999) provide a detailed history of rainwater harvesting systems. The authors state that, whilst the exact origin of RWH has not been determined, the oldest known examples date back several thousand years and are associated with the early civilizations of the Middle East and Asia. In India, evidence has been found of simple stone-rubble structures form pounding water that date back to the third millennium BC (Agarwal & Narayan 1997). In the Negev desert in Israel, runoff from hillsides has been collected and stored in cisterns to be used for agricultural and domestic purposes since before 2000 BC (Evenari, 1961). There is evidence in the Mediterranean region of a sophisticated rainwater collection and storage system at the Palace ofKnossos which is believed to have been in use as early as 1700 BC (Hasse,1989).

2. Anil Agarwal [2013]:Manual or urban rainwater harvesting “catch water where it falls”.

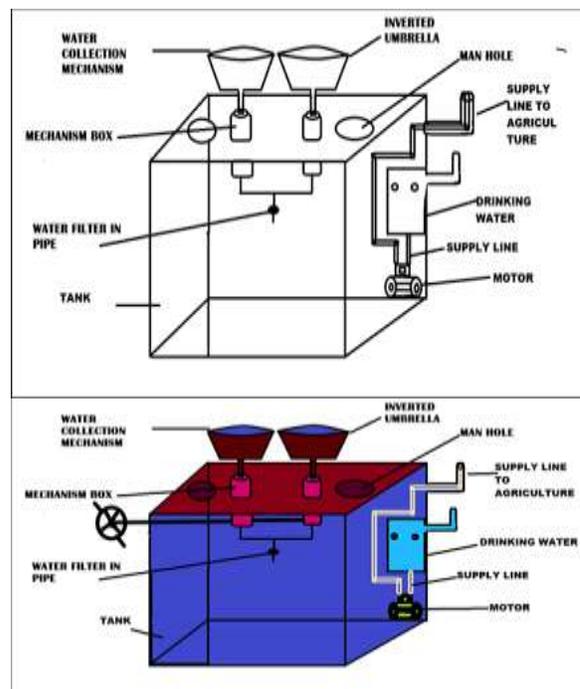
3. KIRAN. A.NIKHIL, T. R HARISH, J KULKARNI (2012): harvested rain water for drinking ROHITASW KUMAR. THAMAN S, AGARWAL G AND SHARMA PUNAM

(2011): rain water harvesting and ground water recharging in north western Himalaya region for sustainable agricultural productivity.

4. Traditional rain water collection

In the traditional rain water collection the water which can be collected in the tank ,but the tank which can not be made by any material only the one large hole which can be produced and the water collected. The before 1995 the rain water collection or harvesting projects which cannot be placed all the cities, but now the days various counties the rain water collection plants which can be placed and store the water.

MODEL



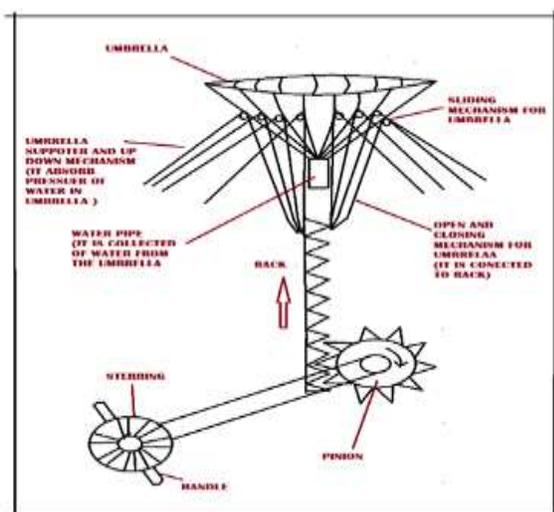
- a. TANK
- b. WATER FILTER FOR DRINKING WATER
- c. RAIN WATER COLLECTION MECHANISM
- d. INVERTED UMBERELLA
- e. WATER FILTER IN PIPE
- f. OPREATED MECHANISM [RACK AND PINOION]
- g. SUPPLY LINE

In the rain water collection system the water which can be collected in the tank with the help of mechanism. The mechanism which is RACK AND

PINION, the pinion which can be mounted on the shaft and the shaft which can be goes outside the tank and the end of the shaft which connected to the pulley or steering or rotating mechanism which can be placed ,and the pulley or steering which is rotates the shaft and the pinion is also rotates .The pinion which can be mesh with rack ,the pinion is rotates then the rack which can be moved in the opposite direction.

The water collecting mechanism is inverted umbrella which can be connected to the operating mechanism rack and pinion .The umbrella which can be made up by the plastic, rubber and aluminum, etc.

At the umbrella the rods of the metal which can be connected in outside surface and the all rods are connected at a center. The rods which can be connected to the Rack with the help of various mechanical links as well as connectors such as the umbrella which can be connected to the rack with a help of a solid metal small bar in various shapes. When the pulley which can be placed outside the tank which rotates in the clockwise direction.



The pulley or steering which can be rotates the shaft is rotates and the pinion is also rotates during this time rack which can move in upward direction which connected to the umbrella ,then the umbrella which is also move in upward direction this motion which give the upward and opening motion to the rain water collecting mechanism. The supporting rods are also connected to the umbrella foe sustain all pressure or forces of air and water and the supporting rod connect to the tank and umbrella , Then the pulley which can be rotates in anticlockwise direction then the rack which can be moves in downward direction

and the first mechanism which can be connected to the to the umbrella ,when the rack is move in downward direction the umbrella which can be also moved in in downward direction and which give the downward or closing motion to the mechanism .

The water which can be stored in a tank in the rainy season and use this water in summer season for agriculture as wall as house hold purpose. The which can be stored in the tank which is goes in the crops with the help of supply line and also for non portable uses of human and water filter which can be also placed in the tank which filter the water for drinking and also solve the problem of water

### CONCLUSION

Now a days lots of the cities which can be suffer from water problem, because the population which can be increased day by day and the peoples which increases the pollution. Due to the pollution in the rainy reason the amount or quantity of rainfall is deceases day by day .then our project which can be stored the clean water and used the water for agriculture as well as house hold purpose and also solve the problem of drinking water .

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