Research Paper E-ISSN NO : 2455-295X | VOLUME : 10 | ISSUE : 3 | SPECIAL ISSUE MARCH-2024

AN AWARENESS ON RAIN WATER HARVESTING IN MADURAI

B. LOGESH	III B. COM (CA) MANNAR THIRUMALAI NAICKER COLLEGE, MADURAI.
P. SAMRAT	III B. COM (CA) MANNAR THIRUMALAI NAICKER COLLEGE, MADURAI.
DR. P.L. SAVITHREE	M.COM., M.PHIL., DGT., PH.D., ASSISTANT PROFESSOR, PG DEPARTMENT OF COMMERCE WITH COMPUTER APPLICATIONS, MANNAR THIRUMALAI NAICKER COLLEGE, MADURAI.

ABSTRACT:

Rain water harvesting is collection and storage of rain water that runs off from roof tops, parks, roads, open grounds, etc. This water runoff can be either stored or recharged into the ground water. To use the locally available rainwater to meet water requirements throughout the year without the need of huge to meet the increasing demands of water. To supplement groundwater supplies during lean seasons. To raise the water table by recharging groundwater. Rainwater harvesting is a technique to store rainwater and reuse it for further use. Many houses have built special spaces for collecting the rainwater, which is usually collected at the place where the rainwater falls. Rainwater harvesting is a global phenomenon which is an essential activity. Rainwater harvesting has long been introduced as a green approach, followed by numerous established guidelines and policies to encourage its implementation. Policy implementation can be explored by assessing fidelity by utilizing a consensus reporting format and model framework.

KEYWORDS:

WATER SCARCITY, ENVIRONMENTAL BENEFITS, GROUNDWATER RECHARGE, SURFACE RUNOFF COLLECTION.

1.1 INTRODUCTION

The collection and storage of rain water for later productive use is defined as rainwater harvesting. It is simply collecting, storing and purifying the naturally soft and pure rainfall that falls upon your roof. Rainwater harvesting is a technique to store rainwater and reuse it for further use. Many houses have built special spaces for collecting the rainwater, which is usually collected at the place where the rainwater falls. Rainwater harvesting is a global phenomenon which is an essential activity. Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water.

1.2 STATEMENT OF THE PROBLEM:

Due to the increasing water demand, rainwater harvesting is gaining importance as it provides an alternative source of drinking and potable water, can be used as irrigation water for the cultivation of crops, and reduces the amount of urban stormwater runoff. Reducing groundwater contamination. Reduce flooding and erosion. Avoiding flooding of roads. Avoiding flooding of roads. To prevent Increased water availability Rainwater harvesting can increase the availability of water, particularly in areas with low rainfall or limited access to water sources. There are many benefits of rainwater harvesting. It can help reduce flooding, recharge groundwater resources, and even provide an alternative water source during droughts. It is also a sustainable and environmentally friendly way to conserve water.

1.3 REVIEW OF LITERATURE:

1. Goel & Kumar (2004) : proposed a generalization to find the best suitable economic analysis of watershed in rain water harvesting. The purpose was to increase the agricultural productivity and minimize soil erosion I the mountainous region of India. With an estimated life of water retaining structures of different sizes ageing 25 to 40 years, the ratios were found out to be 0.41 to 1.33. The PVANR i.e. valuation of construction and maintenance for present value was $215/ ha. Made on the basis of sizes and the value decreased with the increase in the size of the structure. It was projected that the overall expenditure projected was around 15.15-2.20 m US$ and the net income from the proposed catchment plan would be around 1.18-3.86 m. hence it underlined that projected cost will be recovered in 13.17 years if the minimum life span of structure is 25 years.

2. Goel, A. K. & Kumar, R., "Economic analysis of water harvesting in a mountainous watershed in India the water remains same and basic applications can be used to remove impurities from the water. the most efficient and easiest method is to harvest it for reutilization and ground water recharge.

1.4 OBJECTIVE:

- To study on Reducing groundwater contamination in Madurai city.
- To analysis prevent water from flooding and erosion in Madurai city.
- To know awareness on rain water harvesting in Madurai city.

1.5 RESEARCH DESIGN:

To investigate the awareness of rainwater harvesting, a comprehensive research design will be employed, incorporating both quantitative and qualitative methodologies. The study will begin with a literature review to establish a theoretical framework and identify key variables influencing awareness levels. A survey questionnaire will then be developed to gather quantitative data, focusing on demographic factors, knowledge levels, and attitudes towards rainwater harvesting.

1.5.1 METHOD OF DATA COLLECTION:

The focus of the research is to study the behaviour of a people towards rainwater harvesting. Data for study were collected through the primary and secondary sources.

PRIMARY DATA:

Primary data was collected by means of a self-administered structured questionnaire; field survey was employed was employed to collected the primary data

SECONDARY DATA:

The secondary data used in this study were collected from the national and international journals, newspapers, magazines, articles and other records. Websites were also used to collect some statistical information.

1.5.2 SAMPLE SIZE:

The sample size is defined as the number of observations used for determining the estimations of a given population. The size of the sample has been drawn from the population. Sampling is the process of selection of a subset of individuals from the population to estimate the characteristics of the whole population. To take the survey from the people to clarify the problem are faced by the rain water harvesting use of the 50 questionnaires, questionnaire collected by 50 people.

1.5.3 SAMPLE TECHNIQUE:

Simple random sampling is a type of probability sampling in which the researcher randomly selects a subset of participants from a population. Each member of the population has an equal chance of being selected. Data is then collected from as large a percentage as possible of this random subset.

1.6 DATA ANALYSIS

1.6.1 AWARENESS RAIN WATER HARVESTING

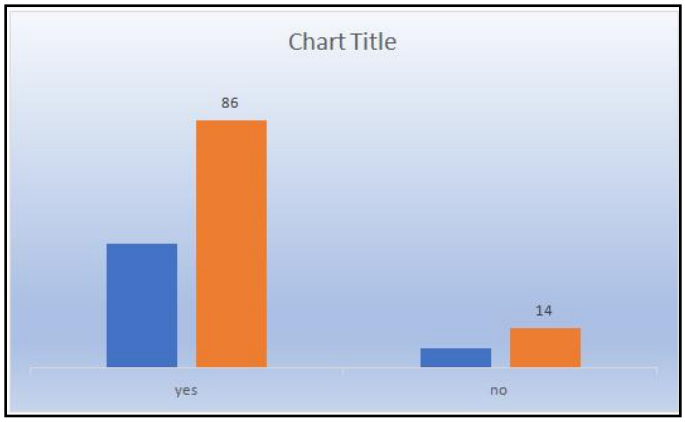
Rainwater harvesting is the process of collecting, storing, and using rainwater for various purposes such as irrigation, household chores, and even drinking water in some cases.

TABLE 1.6.1 AWARENESS RAIN WATER HARVESTING

PARTICULAR	NO OF RESPONSES	PERCENTAGE
Yes	43	86
No	7	14
Total	**50**	**100**

Source: Primary source

FIGURE 1.6.1 AWARENESS RAIN WATER HARVESTING



The sample size for the survey was 50. 86% respondents from 50 respondents are Watch.14% respondents from 50 respondents.

1.6.2 TRADITIONAL TYPES OF RAIN WATER HARVESTING

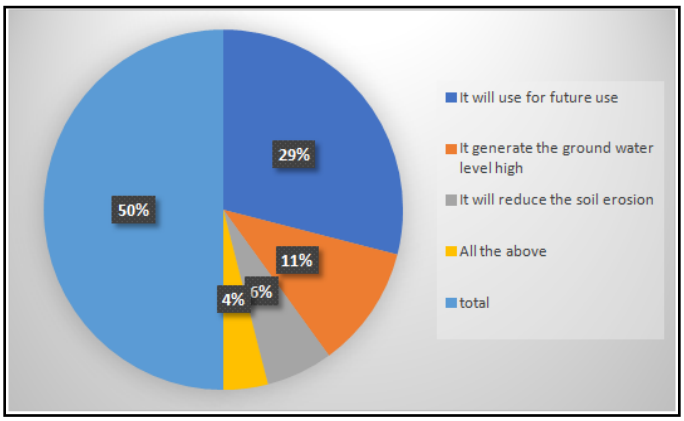
Traditional rainwater harvesting techniques have been practiced for centuries in various parts of the world to capture and store rainwater for later use.

TABLE 1.6.2 TRADITIONAL TYPES OF RAIN WATER HARVESTING

PARTICULAR	NO OF RESPONSES	PERCENTAGE
It will use for future use	29	58
It generates the ground water level high	11	22
It will reduce the soil erosion	6	12
All the above	4	8
Total	**50**	**100**

Source: Primary source

FIGURE 1.6.2 TRADITIONAL TYPES OF RAIN WATER HARVESTING



The sample size for the survey was 50. Above the table shows that 58% respondents were future use. 22%respondents were ground water. 12% respondents were soil erosion. 8% respondents.

1.6.3 COLLECTION RAIN WATER HARVESTING

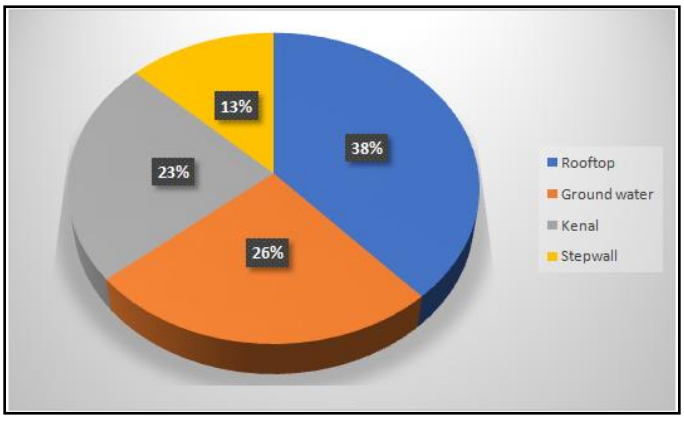
Rainwater harvesting begins with the collection of rainwater, typically from surfaces like rooftops, pavements, or open fields. One method is rooftop rainwater harvesting, where rain falling on rooftops is collected through gutters and downspouts.

TABLE 1.6.3 COLLECTION RAIN WATER HARVESING

PARTICULAR	NO OF RESPONSES	PERCENTAGE
Rooftop	18	36
Ground water	12	24
Kenal	11	22
Step wall	6	12
Total	**50**	**100**

Source: Primary source

FIGURE 1.6.3 COLLECTION RAIN WATER HARVESING



The sample size for the survey was 50. The above table shows that 36%respondents were rooftop. 24%respondents were ground water. 22% respondents were kenal. 2% respondents were stepwell.

1.7 FINDING & CONCLUSION:

FINDING:

- The sample size for the survey was 50. Above the table shows that 72% respondents were Student. 0%respondents were Others. 14% respondents were Profession. 14% respondents were Business
- The sample size for the survey was 50. From the table shows that 38% respondents were 1000-5000. 20% respondents were 5000-10000. 16% respondents were 10000-20000. 6% respondents were Above 20000.
- The sample size for the survey 86% respondents from 50 respondents are Watch.14% respondents from 50 respondents are Not Watch.
- The sample size for the survey was 50. Above the table shows that 58% respondents were future use. 22%respondents were ground water. 12% respondents were soil erosion. 8% respondents.
- The sample size for the survey was 50. From the table shows that 54%respondents were tube well. 20%respondents were step well. 14% respondents were bore wall. 12% respondents were hand well.

SUGGESTION:

Implementing rainwater harvesting involves several key steps to ensure its effectiveness and sustainability. Firstly, assess your local regulations and obtain any necessary permits to proceed with the project. Next, evaluate the roofing material to ensure it is suitable for rainwater collection and free from contaminants. Install gutters and downspouts to direct rainwater towards storage tanks or collection systems, and choose durable and appropriately sized tanks to meet your water needs. Incorporate a filtration system to remove debris and contaminants, and consider additional treatment methods for improved water quality. Design overflow mechanisms to prevent flooding and integrate rainwater harvesting into landscape design for enhanced efficiency. Schedule regular maintenance checks to keep the system functioning optimally and educate your community about the benefits of rainwater harvesting to encourage wider adoption of this sustainable practice.

CONCLUSION:

In conclusion, rainwater harvesting stands as a vital solution to water scarcity and environmental challenges. By capturing and utilizing rainwater, we conserve water resources, promote sustainability, and reduce reliance on traditional water sources. This practice not only offers cost-effective benefits but also aids in flood mitigation, promotes self-sufficiency, and contributes to environmental conservation. Overall, rainwater harvesting is a practical and adaptable approach that can play a

significant role in building resilient and water-secure communities, particularly in the face of climate change uncertainties.

REFERENCES JOURNAL

1. Government of India, Ministry of Water Resources, CGWB, Select Case Studies Rain Water Harvesting and Artificial Recharge, May 2011.

2. Government of India, Ministry of Water Resources, CGWB, Master Plan for Artificial Recharge to Ground Water in India, 2013.

3. Rainwater Harvesting', Parisara, Envis Newsletter, vol.26, January, 2012.

4. The Mahatma Gandhi National Rural Employment Guarantee Act, 2005

5. Government of India, Ministry of Urban Development, Smart Cities Mission Statement & Guidelines, 2015.

REFERENCE BOOK

1. The Rainwater Technology Handbook: Rain harvesting in Building Klaus Koenig Wilobrain, Germany 2001, pp 143

2. Making water everybody's business: practice and policy of water harvesting Anil Agarwal, Sunita Narain and Indira Khurana (Editors) Centre for Science and Environment, New Delhi 2000, (paperback)

3. Water: Charting a course for future Centre for Policy Research Ramaswamy R Iyer

WEBSITE

1. https://www.thedotenvironment.com/DOCS/water%20harv%20refs.pdf

2. https://chat.openai.com/

3. https://link.springer.com/10.1007/978-1-4419-0851-3_332