THINK INDIA JOURNAL

ISSN:0971-1260

Vol-22-Issue-44-December-2019

The Impact of Rain Water Harvesting System in Kerala with Special Reference to Palakkad District

Dr. Liji K. T.[1] and r. Sr. Lilly P. V. [2]

Assistant Professor[1] and Associate Professor[2], Department of Economics, Mercy College, Palakkad

Abstract

Rain water harvesting has regained its importance as a valuable alternative or supplementary water resource, along with more conventional water supply technologies. Water shortages can be relieved if rainwater harvesting is practiced more widely. People collect and store rainwater in buckets, tanks, ponds and wells. This is commonly referred to as rainwater and has been practiced for centuries. Rainwater can be used for multiple purposes ranging from irrigating crops to washing, cooking and drinking. Rainwater harvesting is a simple low-cost technique that requires minimum specific expertise or knowledge and offers many benefits. Rainwater harvesting is one of the alternative technologies for delivering drinking water. In fact, through the ages, this has been a traditional way of enhancing domestic water supply. Rainwater harvesting systems are viable options both for storing water for domestic use and for recharging groundwater aquifers. In this context the present paper is focus on "The Impact of Rain Water Harvesting System in Kerala with special reference to Palakkad district".

Keywords: Rain water harvesting, recharging

Introduction

Rain water harvesting has regained its importance as a valuable alternative or supplementary water resource, along with more conventional water supply technologies. Water shortages can be relieved if rainwater harvesting is practiced more widely. People collect and store rainwater in buckets, tanks, ponds and wells. This is commonly referred to as rainwater and has been practiced for centuries. Rainwater can be used for multiple purposes ranging from irrigating crops to washing, cooking and drinking.

Rainwater harvesting systems can range in complexity, from systems that can be installed with minimal skills, to automated systems that require advanced setup and installation. The basic Rainwater harvesting system is more of a plumbing job than a technical job as all the outlets from the building terrace are connected through a pipe to an underground tank that stores water.

Statement of the problem

Rain water Harvesting System provides the protection of water. It has reduced the spoilage and wastage etc. Now a days, it performs a variety of other functions include the direct collection of rainwater that can be stored in surface or underground water tank, through wells and ponds etc. Palakkad District is a very drought – prone area. Very few studies has been conducted to examine the performance of rainwater harvesting. So, present study makes an attempt to examine the economics of rain water harvesting. The collection and storage of rainwater from run-off areas such as roofs and other surfaces has been practiced since ancient times in India. It is particularly useful where water supply is inadequate.

Objectives

1. To examine the extent of water stress and the significance of roof top rainwater harvesting in recharging the background water level.
2. To investigate impact of rain harvesting to eliminate the problem of water scarcity in Palakkad District.
3. To know the methods used in rainwater harvesting.
4. To understand the role of Government and Non- Government Organisations in rainwater harvesting.
5. To know the expenditure pattern of rainwater harvesting.

ISSN:0971-1260

Vol-22-Issue-44-December-2019

Methodology of the study

The Information relating to the study is collected through Primary and Secondary Sources. Primary data has been collected from individual households with the help of a structured interview schedule and through personal interview. The project was mainly focused on Palakkad region and 51 samples were collected from different areas of Palakkad districts. Institutions like Anganvadi, School, District Panchayat, Palakkad Municipality, Social Services and Hospitals. The Selected respondents have been contacted personally and information required for the study has been collected. To instil confidence and to ensure their corporation in getting information, the purpose of the study has been explained to the respondents and also they are ensured that the information would be kept confidential. Simple tools such as tables, graphs, percentage have been used for data analysis and interpretation.

Secondary data has been collected from sources like Economic Reviews, Economic Surveys and Statistics for Planning, Agricultural Journals, Department of Economics and Statistics and Previous Studies in the Field. Specifically, the rainfall capturing area such as a building roof must be large enough to maintain adequate flow. The water storage tank size should be large enough to contain the captured water.

FUNCTIONING OF RAIN WATER HARVESTING SYSTEM
PROFILE OF THE STUDY AREA

TABLE - 1

Sources	No of Respondents	Percentage
Government Office	9	17.6
School	10	19.6
Anganvadi	6	11.7
Social Service	5	9.9
Hospitals	3	5.9
Households	18	35.3
Total	51	100

Source: Field Survey

The above table represents profile of the study area. About 35.3 percentages were households, 19.6 percentages of school, 17.6 percentages of government offices, 11.7 percentages of anganvadi, 9.9 percentages of social service and 5.9 percentages of hospitals.

LAND REQUIRED FOR CONSTRUCTING RAIN WATERTANKS

TABLE - 2

Land in Possession	No of Respondents	Percentage
Below 100 sqft	19	37.25
100 – 200 sqft	19	37.25
200 – 300 sqft	12	23.53
Above 300 sqft	1	1.97
Total	51	100

Source: Field Survey r = - 0.022

The above table represents the land required for constructing the tank. 37.25 percentages of the respondents constructed their tanks within below 100 square feet and 100 – 200 square feet, 23.53 percentages of the respondents constructed their tanks within 200 – 300 square feet and 1.97 percentages of the respondents constructed their tanks within above 300 square feet. To know relationship between the land required for constructing rain water tanks and storage capacity of tank correlation analysis was carried out. The result shows that there is negative relationship between land required for construction of tank and number of tanks. It indicates that minimum land is required for the construction of tank. Minimum or lack of land is not a

ISSN:0971-1260

Vol-22-Issue-44-December-2019

problem to construction of rain water tanks. Large area of land is not required for construction of rain water tanks.

METHODS OF COLLECTING RAINWATER HARVESTING

TABLE - 3

Methods	No of Respondents	Percentage
Roof Top Harvesting	49	96
Surface Runoff Harvesting	2	4
Total	51	100

Source: Field Survey

The above table represents the different methods of collecting rain water. 96 percentages of respondents had roof top harvesting method and remaining 4 percentages of respondents had surface runoff harvesting method.

Functioning Of Rain Water Harvesting System

- The survey shows that 37.25 percentages of the respondents constructed their tanks within below 100 square feet and 100 – 200 square feet.
- The survey reveals that 96 percentages of the respondents are using roof top harvesting method to collected rain water.
- The survey reveals that 56.86 percentages of the respondents are using tank to store their collected rain water.
- The survey shows that 39 percentages of the respondents are using collected rain water for outside use like gardening and car washing.
- Among 36 percentages of respondents has incurred rupees below Rs.10000.
- Almost 36 percentages of respondents has got subsidy from government.
- Almost 100 percentages of respondents have been using sand filter to filter their collected rainwater.
- Among 96 percentages of respondents has used Ferocement to construct the tank.
- Almost 59 percentages of respondents have opinion that the clean the tank on quarterly basis before autumn season starts.
- Among 92 percentages of respondents has constructed rainwater harvesting system in to meet their water requirements.
- Almost 41 percentages of respondents have the storage capacity of tank between 10000liters to 20000liters.
- About 100 percentages of respondents used plastic to construct their gutters and downspouts.
- About 65 percentages are using cement to construct their roof are made with cement.
- About 100 percentages of respondents were getting average level of satisfaction.
- Almost 39 percentages of respondents had installed their plant below five years.
- Almost100 percentages of respondents are using the harvesting water in summer season.
- About 57 percentages of respondents had the sources of information from awareness programmes.
- About 35 percentages of respondents had no tap connection.

ISSN:0971-1260

Vol-22-Issue-44-December-2019

- Almost 100 percentages of respondents is the most expensive part of tank.
- Among 65 percentages of respondents has constructed their rainwater harvesting system to meet their water requirements.
- All respondents are satisfied with the rainwater harvesting system.
- Among 65 percentages of respondents had supported that by pipe and taps.

Conclusion

To sum up Palakkad is a drought prone area therefore rain water harvesting is an important source for meeting the water requirements of the respondents. The entire respondent has roof top method to collect the rainwater. Majority of the respondents has incurred rupees below 10000 rupees. As compared to non government organisation the role of government to provide subsidy is more. All the respondents are satisfied with their system.

References

- Alem G., 1999. RainWater Harvesting in Ethiopia: An Overview. In "Integrated Development for Water Supply and Sanitation". Addis Ababa.
- Reddy, V. rattan, 2000, "Sustainable Watershed Management Institutional Approach", Economic and Political Weekly, September 2000.
- Katar Singh, 1991, "Determination of People`s Participation in "Watershed Development and Management", An Exploratory Case Study Indian Journal of Agriculture Economics.
- DhruvaNarayana, V.V. (1985). Soil and Water Conservation and Watershed Management. Lead papers. National Seminar on soil and management, New Delhi, Sept. 17- 18, 1985.
- Mishra, P.R., Grewal, S.S., Mittal, S.P. and Agnihotri, Y. (1980). Operational Research Project on watershed management forsediment, drought and flood control - Sukhomajri, CSWCRTI, Res, Centre, Chandigarh.
- Murthy, K.N.K., Issac, V.C.Vangain, N.S.(1980). Harvesting of rainwater from treated plots. Annual Report, 1977. CAZRI, Jodhpur, pp. 25 – 26.
- Evans, C., P. Coombes and R. Dunstan. 2006. Wind, rain and bacteria: The effect of weather on the microbial composition of roof – harvested rainwater.
- Jones, M.P. and W.F. Hunt. 2010. Performance of rainwater harvesting systems in the southeastern United States. Resour. Conserv. Recy. 54: 623-629.
- Kim, K. and C. Yoo. 2009. Hydrological modeling and evaluation of rainwater harvesting facilities : Case study on several rainwater harvesting facilities in korea. J. Hydrol. Eng. 14(6): 545 – 561.
- Meera, V. and M. M. Ahammed. 2006. Water quality of rooftop rainwater harvesting systems: A review. J. Water Supply Res. T. 55(4): 257 – 268.
- Magyar, M. I., V. G. Mitchell, A. R. Ladson and C. Diaper. 2007. An investigation of rainwater tanks quality and sediment dynamics. Wat. Sci. Tech. 56(9): 21 – 28.