

Study on cost analysis of rooftop rainwater harvesting in residential premises

■ R.H. RAJAKUMAR, P. NATARAJAN, H.K. SHIVANAND AND M.S. MADHUSUDHAN

ABSTRACT : An investigation was carried out to study the cost analysis of rooftop rainwater harvesting in Tamil Nadu Agricultural University, Campus, Coimbatore. The cost analysis revealed that among all individual residential blocks, all hostel buildings and buildings in different combinations, all hostel combinations was found to be more feasible for installation of rooftop rainwater harvesting structure with a benefit cost ratio of 2.82 and pay back period of 1.32 years. For individual residential blocks and all residential blocks combination, the all residential blocks combination was found to be more feasible for installation of rooftop rainwater harvesting structure with a benefit cost ratio of 2.27 and pay back period of 1.78 years. Hence, these combinations are more suitable than any other building combinations for rooftop rainwater harvesting systems. All hostel buildings combination and all residential blocks combination buildings can generate 34,48,464 and 40,92,611 litres of water per annum, respectively. Due to rooftop rainwater harvesting a sum of Rs. 1,03,454 and Rs. 1,22,778 per annum would be saved from all hostels and all residential blocks combination which otherwise could be incurred from transporting water from tanker to these buildings combinations and a computer program 'C programs' were developed for water budget calculation and design of rooftop rainwater harvesting structure for residential and hostel buildings

Key words : Rainwater harvesting, Rooftop rainwater harvesting, Cost analysis

How to cite this Article : Rajakumar, R.H., Natarajan, P., Shivanand, H.K. and Madhusudhan, M.S. (2012). Study on cost analysis of rooftop rainwater harvesting in residential premises. *Engg. & Tech. in India*, 3(1&2) : 52-54.

Article Chronicle : Received : 08.02.2012; **Revised :** 21.02.2012; **Accepted :** 12.03.2012

INTRODUCTION

Water is an essential and vital component of our life. Every living cell is water dependent and water sustained. All human activities are predicted upon the availability of water. Water is omnipresent; its existence is a fundamental assumption. Water is considered to be a free commodity-a substance to be taken, used and disposed-without a thought that it is becoming valuable. Water shortage is the gift of 20th century to the 21st century, which incidentally is also the beginning of the new millennium. Horrible predictions are being made regarding the water problems being faced by the mankind during the next 50 years. The global water crisis will reach

unprecedented levels in the years ahead with growing per capita scarcity of water in many parts of the developing world. Water resources are steadily declining because of population growth and climate change. Water supplies are falling while the demand is dramatically growing at an unsustainable rate (Gopinath, 2000).

EXPERIMENTAL PROCEDURE

Study was conducted to study the cost analysis of rooftop rainwater harvesting system in residential premises based on rainfall analysis, at Tamil Nadu Agricultural University, Campus in Coimbatore.

Experimental site:

For designing roof top rainwater harvesting structures, residential buildings 'B' 'C' and 'D' type, P.G. Hostel, P.P.C. Hostel and Tamizhagam Hostel were selected and the area was located in the southern side of the TNAU campus. The TNAU campus was located at latitude of 11° N, longitude of 77 °E and altitude of 426.72 m (above MSL). The average annual rainfall

MEMBERS OF RESEARCH FORUM

Address for correspondence :

H.K. SHIVANAND, Department of Soil and Water Conservation Engineering, University of Agricultural Sciences, RAICHUR (KARNATAKA) INDIA
Email: shivuagengg@yahoo.co.in, halidoddiraju@gmail.com

Coopted Authors :

R.H. RAJAKUMAR, P. NATARAJAN AND M.S. MADHUSUDHAN, Department of Soil and Water Conservation Engineering, University of Agricultural Sciences, RAICHUR (KARNATAKA) INDIA