



Study on technical feasibility and economic viability of rooftop rainwater harvesting systems suitable for residential premises

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Abstract : An investigation was carried out to study the technical feasibility and economic viability of rooftop rainwater harvesting systems suitable for residential premises in Tamil Nadu Agricultural University, Campus, Coimbatore. The technical feasibility and economic viability of rooftop rainwater harvesting systems revealed that among 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, this combination was more suitable than any other individual blocks for rooftop rainwater harvesting systems. All the residential blocks combination can generate 40,92,611 liters of water per annum. Due to rooftop rainwater harvesting a sum of Rs. 1,22,778 per annum would be saved from all residential blocks combination which otherwise could be incurred from transporting water from tanker to these buildings combinations. The recharge pit can be constructed for all those residential blocks which are having surplus water.

Key Words : Rainwater harvesting, Rooftop rainwater harvesting, Technical feasibility, Cost analysis, Pay back period

View Point Article : Rajkumar, R.H., Natarajan, P. and Shivanand, H.K. (2013). Study on technical feasibility and economic viability of rooftop rainwater harvesting systems suitable for residential premises. *Internat. J. agric. Sci.*, 9(1): 232-236.

Article History : Received : 14.08.2012; Revised : 15.10.2012; Accepted : 03.12.2012

INTRODUCTION

In recent years, due to rapid urbanization and industrialization water demand in urban areas has increased manifold. Competing demands of water for agriculture, industrial and other urban usage have created a tremendous pressure on natural water resources viz, surface and groundwater. The technology of water harvesting is as old as our civilization. It is in practice in order to augment groundwater by artificial recharge and to drinking water resources for rural areas. The demand for water is realized from different fronts such as water for domestic purposes, civic or public purposes, fire fighting purposes, The central idea behind any water harvesting strategy should be such that the excess water available during rainy period should be

collected and stored for a compensative usage during non-rainy periods (Boers, Th.M *et al.*, 1982).

MATERIALS AND METHODS

Study was conducted to study the technical feasibility and economic viability of rooftop rainwater harvesting systems suitable for 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 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

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