

ABSTRACT

This article examines the reliability of rainwater harvesting (RWH) systems in subcatchment area. Using water balance simulation and two definitions of this value (time-based and volumetric ones), the reliability of rainwater harvesting systems for 25 locations in Medenine's dryland agricultural areas in south-eastern Tunisia is assessed. Extensive computer software was created using modelling idea for daily water balance, and three meteorological extremes, i.e. wet, average and dry years, were selected by analysing historical 20-year daily rainfall data to assess RWH system performance. Results stated that for wet climatic conditions, volumetric reliability of around 30–70% can be attained, whereas for these circumstances, only 10–24% time-based reliability can be accomplished. The method described in this article can also be applied to other arid and semi-arid areas by using daily rainfall data to predict water savings and the reliability of RWH systems.