

LAND DEVELOPMENT METHODS FOR RAIN WATER HARVESTING ON STORAGE AND DISTRIBUTION OF SOIL MOISTURE

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Rain Water Harvesting (RWH) is the best available option to mitigate the moisture stress in the Dry zone rain-fed upland farming. An experiment was conducted to evaluate the impact of different land development methods for RWH at *Horiwila* in DL_{1b} agro-ecological region. Two land development methods; Terraces (T1) and Contour bunds (T2) and Untreated land (T3) were tested for the effectiveness on storage and spatial distribution of soil moisture within the root zone using Randomized Complete Block Design with four replicates. Soil samples were collected at two soil depths under different rainfall intensities, categorized as High, medium and low. Daily rainfall data were obtained from secondary sources.

Results revealed that storage and spatial distribution of soil moisture in the upper 37.5 cm and 75 cm varied with the intensity of rainfall events. Equal storage and uniform distribution of soil moisture were observed in all treatments under both low and high rainfall intensities. Best uniformity of spatial distribution of soil moisture was found in terraces and non treated lands under medium intensity of rainfall. Moisture storage in the soil profile was significantly low in untreated lands in compared to terraces. Soil moisture storage in both terrace and Contour bunds was similar and significantly higher than non-treated lands. Analysis of daily rainfall showed in average years Dry zone of Sri Lanka, experiences more rainfall events with medium intensity. For rain-fed uplands in the Dry Zone (DL_{1b}) of Sri Lanka, study concludes and can be recommended that terrace is the best land development method for Rain Water Harvesting considering higher storage and better distribution of soil moisture within the root zone.

Key words: Contour bunds, Rainfall, Soil moisture, Terraces