

Abstract

The warming and climate change in recent years has led to changes in rainfall patterns. Most precipitation occurs in the form of rainfall instead of snow, which can be avoided without proper use, usually in the form of runoff or flood. Therefore, the optimal use of rainwater, especially in arid and semi-arid areas, is of particular importance. The Almjooq basin, located in the Torbat-e-Jam city of Khorasan-e-Razavi, which has a dry climate, is no exception to these conditions. For this purpose, by creating high-runoff runoff reservoirs and storing them, it is possible to meet the water requirement of plants and dominant tree species in the water courses. In this regard, four treatments including natural surface, pebble, straw and dense cover were selected and three treatments were considered for each treatment. Each plot was square with a square area of 4 square meters and was constructed in sloping lands with a gradient of 30 to 35 percent. The results from 58 recorded rainfall events showed that runoff from natural surface, pebble, straw and shale cover and dense soil were 37, 29, 33 and 47 percent rainfall respectively. For these treatments, runoff thresholds were 2.12, 2.25, 2.51 and 2.02 mm, respectively. The results of analysis of variance between treatments showed that runoff from precipitation in different treatments at a probability level of less than 1%. According to the comparison of the averages, the compacted soil treatment is the most suitable treatment for collecting runoff. However, in comparison with other treatments, in terms of the ability to perform normal surface treatment, there are better conditions for application in the studied area and it is easily accessible. Using these methods, water requirement can be provided for part of the arable land of the area during waterlogging periods.

Key words: Rainwater harvest, Runoff, Pebbles, Almjooq, Water requirement.



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**Effect of Straw and Peat Treatments, Pebbles and Soil
Compaction on Increasing the Runoff Production Rate of
Rainfall Pond
(Case study: Al-Mojouq village, Torbat-e-Jam city)**

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