

Increased runoff through reduced infiltration in Saudi Arabia

Faisal Muhammad-Hasan Said

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Abstract

Some of the ways of increasing water supply in a country like Saudi Arabia are cloud seeding, diversion of major rivers, iceberg transportation and the utilization of a storm water collection system (water harvesting). The last of these alternatives appears to be an attractive proposition particularly in regions that are far away from the coastal areas and which have no other sources of water supply.

The primary objective of this study is to investigate possibilities of reducing infiltration capacities of desert sand by the application of crude oil on the sand surface. This study was completed in three phases using the four types of crude oil available in Saudi Arabia.

In the first phase, sand box models were used with the variable head of water, in the second, a constant head of water was maintained on top of the treated sand surface, and in the third, a rainfall simulator was used to determine the effect of raindrops on the treated surface. Extremely encouraging results were obtained and the results show that crude oil (specially Medium crude) is an excellent waterproofing and binding agent.