

Hydraulic, clogging, Moistube irrigation, water quality

ABSTRACT

Irrigation consumes approximately 70% of total freshwater use worldwide. This necessitates the use of efficient irrigation methods such as micro-irrigation. Moistube irrigation (MI) is a new subsurface irrigation technology where the water emits from a semi-permeable membrane of the Moistube at a slow rate depending on the applied pressure and soil water potential. There is currently limited information on the performance of Moistube tapes with respect to discharge as a function of pressure or water quality. The aim of this study was to determine the flow characteristics of Moistube tapes as a function of pressure and the effect of suspended and dissolved solids on the emission characteristics. The pressure-discharge relationship was determined within a range of 20 kPa and 100 kPa. The clogging of the Moistube was determined using water containing low, moderate and high concentrations of suspended and dissolved solids at 20 kPa and 30 kPa. The results indicated that the Moistube discharge follows a power function with the applied pressure. The discharge decreased linearly over time because of clogging. Suspended solids had a more severe clogging effect on Moistube than dissolved solids. The results of this study should help in the design, operation and maintenance of MI systems.

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