

VELOCITY DISTRIBUTION IN CHANNELS INFESTED BY SUBMERGED WEEDS

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Abstract

Existence of weeds in irrigation channels causes many serious problems such as velocity reduction, increase in water levels, and prevents water from reaching the canal end. So aquatic weeds have to be controlled to an extent to improve the channels performance. The present paper aims to study experimentally the velocity distribution in channels with the presence of submerged weeds in case of maintaining the water levels behind the infested area. Experimental data were collected using a laboratory flume in the hydraulic laboratory of the Hydraulic Research Institute sponsored by the National Water Research Center (NWRC). The flume of relatively large dimensions (60 cm depth, and 20.8 m long) and fixed bed slope (0.0062). Flexible plastic branched roughness elements were used with different intensities ($I_s = 0.0062, 0.0123, \text{ and } 0.0246$). The weeds intensities were tested with different discharge rates and different tail water depths. Dimensionless general equation in terms of the flow and weeds parameters for average velocity was developed and compared with the experimental data. The comparison proved a good fit and high accuracy.