

The selection of flow rate to prevent erosion in furrow irrigation

Ramazan Meral¹ Sebahattin Kaya, Azize Dogan Demir,

Yasin Demir, Veysel Turan

Abstract

The surface irrigation methods are commonly used to apply crop water requirement in our country and the world. The runoff losses decrease irrigation efficiency and caused soil losses, especially at furrow irrigation. Furrow rate and length are important parameter for water and soil losses and are determined depend on the soil texture and slope. Although many studies on the length of the furrow; there are significant shortcomings in the determination of non-erosive flow rate. Generally flow rate is determined as a function of only the slope; but it can be varied by the soil texture, infiltration and water advance features. In this study, different methods will investigate to determine non-erosive flow rate with using furrow geometry and flow velocity. As a result of evaluation of literatures, field observations and secondly semi-empirical method with the using more field data are recommended. For this aim maximum acceptable flow velocity was accepted as 0.13 m.s-1 for "erosive silty soils"; and 0.21 m s-1 for "more stable clay and sandy soils". In this way, optimal flow rate using will contribute to more efficient water use and conservation of water and land resources

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¹ Corresponding author: Bingol University, Department of Biosystem Engineering, 12000, Bingol, Turkey.
rmeral@bingol.edu.tr