Abstract

Thermal studies of soils provide basic information useful for their close relationship with essential physicochemical and biological processes, both natural environments and those subject to management, such as those devoted to agricultural production and urban setting. The target of this study was to compare two methods, rank ratio (RR) and maximum occurrence (MO), to estimate the damping depth (d) and thermal diffusivity (α), for being two variables that describe the theoretical behavior vertical flow of the soil temperature. This research was carried out in the Hydraulics Garden Irrigation and Drainage Department of the Universidad Autónoma Agraria Antonio Narro in Buenavista, Saltillo, Coahuila; Mexico (Lat 25.353 N and Long 101 033 ° W), the climate is dry and temperate, C(W0), with annual average temperature of 16.9 °C and rainfall of 498 mm, where type T thermocouples were placed to measure the temperature in soils of sandy, loamy and clayish, at six depths: 2 cm, 5 cm, 10 cm, 20 cm, 30 cm and 50 cm. The results indicated that the best method of measurement was the ratio ranges (RR) since the difference between the values measured with the sensors (16.06 °C) and the calculated (16.09 °C) is very small and the statistical difference between both sets of data (RR and MO) was highly significant (alpha 0.05).

Keywords

Thermal diffusivity, soil temperature.