KafrelsheikhUniversity
Faculty of Agriculture
Soil and Water Department

IRRIGATION INTERVALS BY IMPERICAL EQUATIONS USING LYSIMETERS

BY
FATMA HASSAN ELSAYED HASSAN
B. Sc.(poultry production), Fac.of Agric.,
KafrelsheikhUniversity,2010

A THESIS
Submitted in Partial Fulfillment ofTheRequirement
For the Degree
OF
MASTER OF SCIENCE
IN
Agricultural Sciences (Soils)

2019

List of Contents

Subject	Page

Subject	Page

LIST OF TABLES

Title	Page

LIST OF FIGURES

ABSTRACT

A lysimeters experiment was designed to study how to manage irrigation scheduling using different empirical equations compared to traditional irrigation method. Design of experiment was random block with three replicates. The experiment was repeated in two successive seasons 2016 and 2017 as well as 2017/ 2018 for Maize and sugar beet crops. Four irrigation treatments were used as $T_1$for traditional, T_2 by Belany - Criddle equation, T_3 by Radiation equation and T_4 by penman equation. All irrigation treatments were inserted by 70% of soil water depletion. The results showed that T_3 had the highest values of water productivity (0.89 kg/m^3) and productivity of irrigation (0.63 kg/m^3) as an overall average of the two seasons. Data revealed also that T_1 had the highest overall mean values applied water and water consumptive use (3862.47 m^3/fed &2826.02 m^3/fed). The results indicated that the highest values for grain yield was recorded by irrigation treatment T_3 with values of 2013.90 and 1925.53 kg/fed for maize crop, while sugar beet crop the results showed that T_3 had the highest values of water productivity (14.1 kg/m^3) and productivity of irrigation (9.60 kg/m^3) as an overall average of the two seasons. Data revealed also that T_1 had the highest overall mean values applied water and water consumptive use (2678.38 m^3/fed &1822.99 m^3/fed). The results indicated that the highest values for root yield was recorded by irrigation treatment T_3 with values (25.17 and 24.81 ton/fed)