THE USE OF METEOROLOGICAL DATA AND GEOGRAPHIC INFORMATION SYSTEMS (GIS) IN THE INTEGRATED MANAGEMENT OF SOIL AND WATER FOR SUSTAINABLE AGRICULTURE IN TOSHKA

Submitted By

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B. Sc. of Agricultural Sciences, Faculty of Agriculture, Tanta University, 2002
Diploma in Environmental Sciences, Institute of Environmental Studies & Research, Ain Shams University, 2012

A thesis submitted in Partial Fulfillment
Of
The Requirement for the Master Degree
In
Environmental Sciences

Department of Environmental Agricultural Sciences
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2018

APPROVAL SHEET

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Abstract

Abstract

The present investigation was carried out at the experimental Farm, Water Studies and Research Complex (WSRC) Station, National Water Research Center, Toshka, Egypt during 2013/2014 and 2014/2015 seasons. Wheat crop was used in the current study to test the integrated management of water and agriculture as well as in an assessment of reference evapotranspiration (ET_0) within the meteorological data by using computer programs.

The transactions of different irrigation regimes (60, 80, 100 and 120%) was applied based on crop evapotranspiration (ETc) that was calculated by the amounts calculated daily (ETo), measured using penman-monteith method, where the irrigation process were carried out at 8 am.

Results showed the comparison between Misr 1 and Misr 2 wheat cultivars in both seasons under the different irrigation treatments was not significant for all studied characters while there were significant differences among irrigation regimes (60, 80,100 and 120%) (ETc) as well as in terms of Super Absorbent Polymers (SAP) (hydrogel treatment) compared to null treatment. .

The heighest wheat crop productivity was obtained when used (120% ET_c treatment) coupled with adding Hydrogel as a (SAP), so this recommendation should be used if there is no problem in irrigation water because it increases productivity. However, the lowest wheat crop productivity was recorded by (60% ET_c treatment) without adding Hydrogel as a (SAP), so this method should be applied if there was a problem in irrigation to save water.

The reduction of irrigation water is one of the most important strategies now to face the water scarcity problem accordinary.It can

reduce the small proportion of production with reducing irrigation water ratio up to 20-40% from water requirements as ashowed in the experiment to could be a good decision toward saving more water to irrigate more land and achieve the difficult equation which close the gap between production and demand and water scarcity conditions.

Keywords: *Meteorological data , Toshka , wheat and crop water requirements.*

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