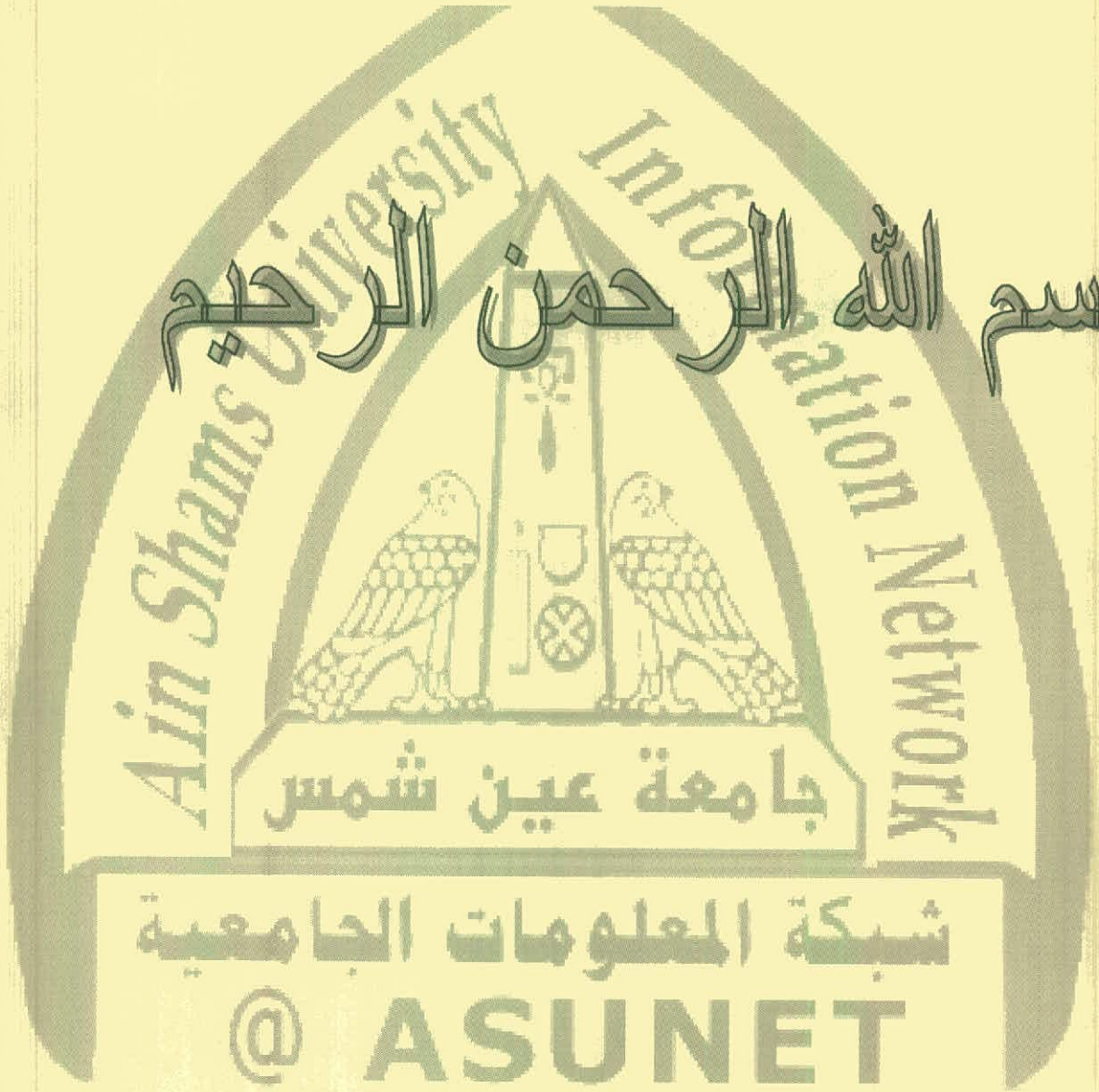
شبكة المعلومات الجامعية



بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

CONTRIBUTION FROM GROUND WATER TO WATER REQUIREMENTS OF SOME CROPS

By

Sayed Abd El-Sameia Aly

B.Sc. Agric. Sci (Soils), Cairo University,

Fayoum Branch, 1981

Thesis

Submitted in Partial Fulfilment of the Requirements for the Degree of

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Fayoum, Egypt

2000

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ABSTRACT

Ground water plays a vital and important role in agricultural, water resources, irrigation practices and management. It also may contribute to the water requirements for the grown crops in different locations. subterranean ground water has been defined as the tension free continuous mass of water below the soil surface, and water table is defined by the levels at which water stands in the wells that penetrate the water body just for enough to hold standing water . Because capillary rise is of direct relevance to the ground water , it occurs in the root zone of the soil during the evapotranspiration and when the attraction between soil particles and the water molecules is greater than the force of gravity . This capillary rise has been modeled by a series of tubes of different diameters representing pores of various sizes. Additionally , the ground water , capillary flow and rise and/ or moisture limits of soils are affected by many factors such as , evaporation, precipitation and the balance between annual evaporation, precipitation and run off , in addition to meteorological , environmental and crop conditions as well as soil properties and plant parameters , and geophysical properties .

Knowledge about consumptive use of water or evapotranspiration is necessary in irrigation development, planning and operating projects, hydrological cycle and is essential for estimating water requirements of grown crops. For achieving the current study objectives, two different locations Demo and Ehansia (loamy sand and clay textured soils, respectively). In each location were chosen two main crops (wheat and maize) were grown, applying three available soil moisture depletion treatments (25,50 and 80%). Some soil properties, plant parameters, water consumptive use or evapotranspiration, theoretical

evapotranspiration, crop coefficients , water use efficiency , and the contribution from the ground water table to the grown crops water requirements have been determined and calculated. The obtained results revealed that the investigated soil properties have a close relationship with the ground water and salinity, depth and fluctuations of ground water table that have a considerable impact on the soil with different ground water table depths. Moreover, the studied plant parameters of grown wheat and maize crops have been significantly influenced by the depth, fluctuations and salinity contents of the ground water in the different textured soils. Water consumptive use, crop coefficients, water use efficiency and the contribution from ground water to the wheat and maize water requirements are closely associated and correlated with both of ground water depths and available soil moisture depletion levels. The results also showed that the shallower the water table depth, the highest contribution values at different available soil water depletions in the two studied locations along the two studied successive seasons. The findings and statements under the conditions of the current study will be beneficial in crop water requirements and duties. planning and operating irrigation development , practices and projects , in addition to rationalization of irrigation water as well as crop and soil management and satisfactory productivity of the existed grown crops.

Key wards : Ground water table , water requirements , available soil water depletion , wheat and maize crops .

CONTENTS

Page No

LIST OF TEXT TABLE S

Page No.