

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



# شبكة المعلومات الجامعية

## التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
على 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 الوثائق الأصلية تالفة

# بالرسالة صفحات لم ترد بالاصل



**Alexandria University**  
**Faculty of Agric. (Saba-Bacha)**  
**Soil and Agric. Chemistry Dept.,**

**A COMPARISON OF SOME FERTIGATION SYSTEMS FOR  
SOME VEGETABLE CROPS PRODUCTION IN THE  
NORTH WESTERN COAST OF EGYPT**

**A THESIS**

**Presented to the Graduate School**  
**Faculty of Agriculture**  
**(Saba-Bacha)**  
**Alexandria University**

**In Partial Fulfillment of the Requirements**  
**For the Degree of**  
**MASTER OF AGRICULTURAL SCIENCE**

**IN**

**(SOIL AND WATER)**

**BY**

**HANY MOHAMED SHAWKY EL-SAYED EL-BELTAGY**

**1999**

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# INTRODUCTION

## INTRODUCTION

At the new reclaimed areas in Egypt, there is a critical balance between water resources and water consumption, thus water saving is becoming a decisive factor for agriculture expansion. So, irrigation should be manipulated to maximize crop production per unit of applied water (water-use efficiency). In such areas, demands for irrigation scheduling and determining the crop water requirements impose the need to water management.

Irrigation and fertilization play an important role in food production for the expanding population. The control of soil nutrients and water content in root zone depth provides both enough water and nutrients as aim of the water and nutrients management. A continuous improvement in water and nutrients application methods with efficient use, is essential to keep high food production in balance with the increasing demand.

Fertigation (application of fertilizer nutrients with irrigation water) as an appropriate technique for efficient use of water and fertilizer is being practiced in greenhouse crops and also in newly reclaimed soils with drip irrigation.

The clay Jar or pitcher irrigation technique was used over two thousand years ago in China, after that, it was used in many areas (such as India, Brazil, Japan and ancient Egypt), but it was a simple system. This system is considered a method of subsurface irrigation.