بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

THE NEW MECHANIZED TECHNIQUE FOR SUB – SURFACE IRRIGATION

BY

MAGDY ABD EL-WAKEEL ABD EL-HAMEED MATTAR

A thesis submitted in partial fulfillment

of

the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Agricultural Science

(Agricultural Engineering)

Department of Agricultural Engineering

Faculty of Agriculture

Zagazig University

2002

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Approval Sheet

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ABSTRACT

Sub-surface irrigation offers advantages in water and energy conservation.Sub surbace irrigetion technology may be made profitable for multiple crops by finding optimum installation methods and lateral spacing that may be suitable.

The evaluation of this study depnded on two stage :

The first stage,to evaluate four installation methods [Manual , half mechanization by ditcher ; semi mechanization by loader back hoe and full mechanization by sub surface lateral installation equipment (developed equipment)] at burial depth 10 , 20 , 30 , 40 and 50 cm

The second stage, was conducted for two years period (1999-2000 and winter 2001) to study the effect of using sub-surface irrigation under different planning of lateral pipes (spacings and burial depths)on yield of two crops were pea and cotton in a sand texture at the Egyptian Tank Plant Factory 200.

Lateral pipe spacings were (100 ,150 , 200 cm and 200 cm with double discharge) and two burial depths 20 and 30cm.

From the obtained results, it can be deduced that the sub-surface lateral installation equipment (SLIE) is considered the proper method for pipe installation compared to other methods because it has higher field capacity ,installation efficiency and lower power requirements and costs. The increase of burial depth from 20 to 30 cm had insignificant effect on yield Pea and Cotton .But the increase of lateral spacing had very significant effect on yield Pea and Cotton.

The lateral spacing 100 cm gave adequate available water in root zone for all plants during growing stage., but in the spacing 200 cm, the water movement was very limited and plant may suffer from water deficit .

According to economical analysis the treatment A (spacing 100 cm between lateral) gave more profit for pea and cotton.

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