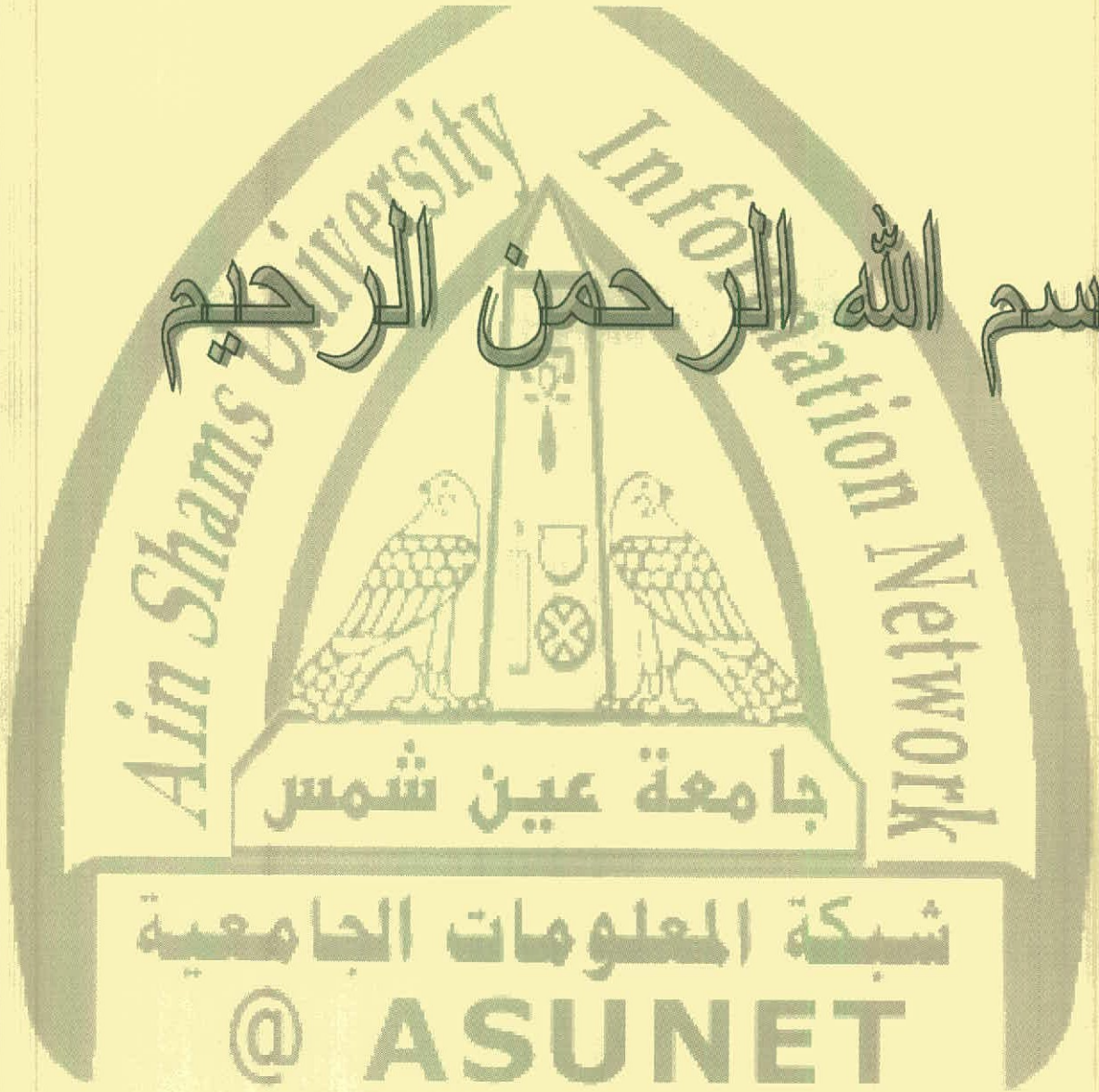
شبكة المعلومات الجامعية



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

FACTORS FOR SELECTING EQUIPMENT AND SYSTEMS FOR MECHANIZED IRRIGATION

By

AHMED MAHMOUD ABD EL-MONEIM HEGAZI

B. Sc. (Agric. Mechanization), Ain Shams Univ., 1987

A thesis submitted in partial fulfillment

of

the Requirements for the Degree of

MASTER OF SCIENCE

in

Agricultural Science

(Agric. Mechanization)

Department of Agricultural Engineering

Faculty of Agriculture

Ain Shams University

2000

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Date of Examination: 9 / 2 / 2000

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ABSTRACT

AHMED MAHMOUD ABD ELMONEIM HEGAZI, Factors for Selecting Equipment and Systems for Mechanized Irrigation. Unpublished Master of science thesis, Ain Shams Univ., Faculty of Agriculture, Agricultural Engineering Dept., 2000.

The objective of this investigation was to help new reclaimed landowners and extension specialists to select the appropriate method for irrigation, while minimizing irrigation problems and expenses.

Systems under investigation included: (1) common drip irrigation system, (2) drip irrigation system with solar-powered pump, (3) center-pivot sprinkler system, and (4) traditional intensive-irrigation.

Drip-irrigation systems were examined to identify their suitability for powering with non-conventional source (solar photovoltaic power). Results showed that solar energy, as a power source for water pumping in drip irrigation, is applicable under Egyptian conditions (solar-electric generation efficiency was 8-9%) with the disadvantage of high cost, which hampers widespread in the Nile Delta and Valley, but it stands better chances in the remote areas, where the common energy-sources are not available. Two different solar pumps performance were also given. Measured parameters included resulting moisture distributions in soil and their suitability to shallow or deep-rooted crops.

This evaluation was conducted to establish a selection methodology system to help new reclaimed landowners and extension specialists to select the appropriate method for irrigating their lands, minimizing their irrigation process problems and expenses. The system of selection depended on farm resources (soil, water, crop and labor). Consultations and literatures validated results. Each irrigation method was given a rank number under each individual farming

parameter, the highest summation indicates the most suitable irrigation method for the set conditions.

Five cases were taken for validation (Inshas, Beni-Salama, Shalakan, Nubaria, and site for proposed testing station at Sohag. Results showed that drip irrigation system is best in saving energy and water in the new by reclaimed-lands, but it was the 2nd choice for old lands in Delta area, where flood system is the 1st choice for these areas.

Key words: Irrigation - Selecting - Solar Energy - Center pivot - Drip.

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