



شبكة المعلومات الجامعية

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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 تغييرات



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 نم ترد بالاصل

**ECOPHYSIOLOGICAL AND
TECHNOLOGICAL STUDIES ON
FLAX "*LINUM USITATISSIMUM*, L".**

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A Thesis

Submitted to Faculty of Science
Tanta University

For

Ph. D. Degree in Botany
(Ecophysiology)

By

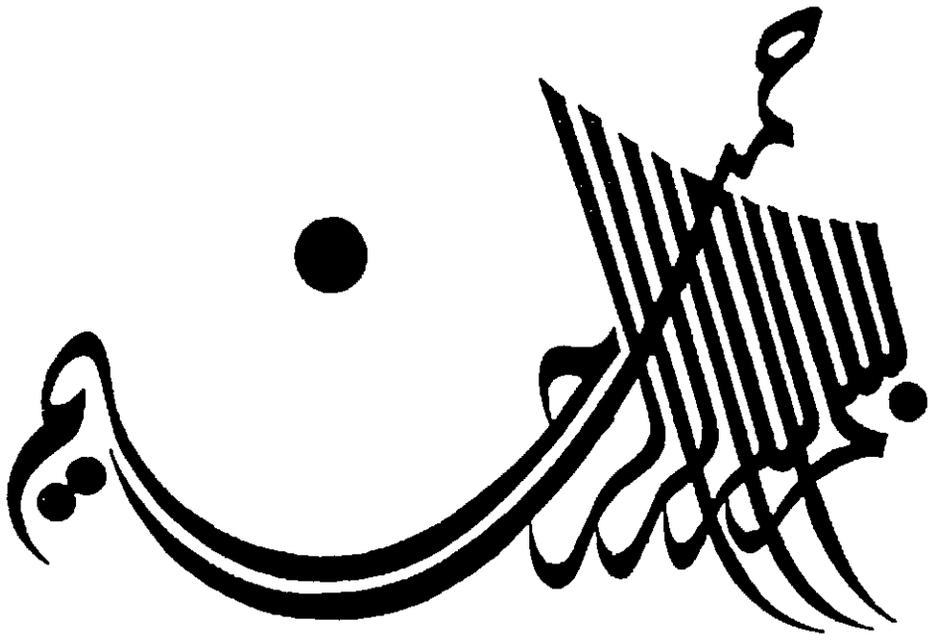
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1995



قَالَ لَوْلَا سُبْحَانَةُ رَبِّكَ الْوَعْدُ لَمْ نَسْأَلِ الْقَوْمَ الْعُلَمَاءَ عِلْمَنَا
إِنَّمَا نَسْأَلُكَ الْعِلْمَ الْخَالِصَ

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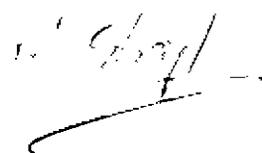
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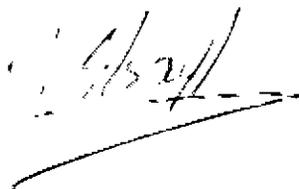
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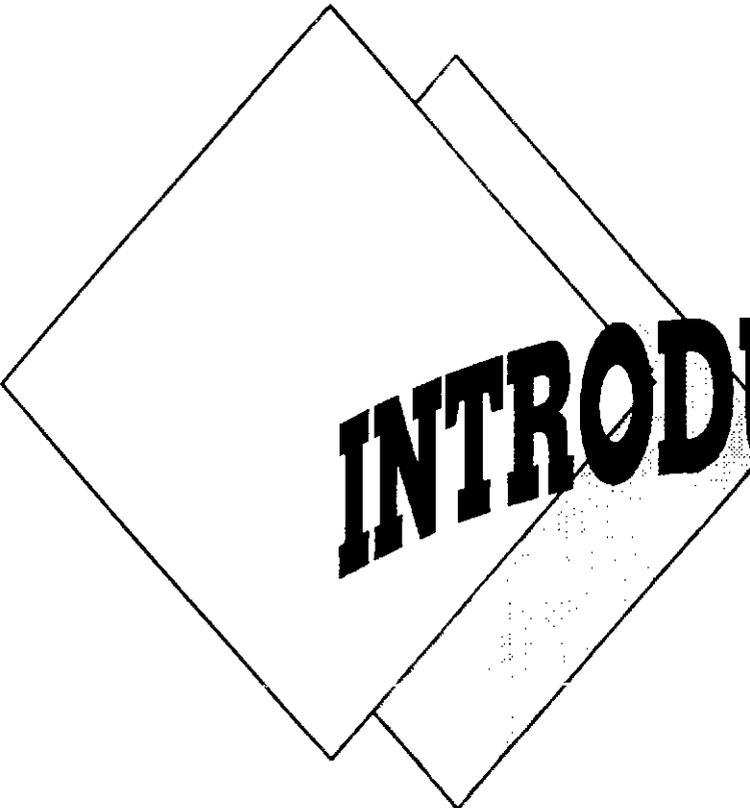
This thesis has not previously been submitted for a degree at this or any other university and it is the original work of the author .

R. A. El - Naggar

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INTRODUCTION

Introduction

Flax had been cultivated by ancient Egyptians since 4000 years. Flax is a bast fiber (phloem fiber) taken from stalks of the plant *Linum usitatissimum* L. When processed into yarn or fabric it is called *Linen*. The word flax comes from the Anglo-Saxon word *Fleax* while linen from *Lin*. Nile Delta in addition to Giza and El-Fayoum are the most common regions of flax cultivation in Egypt. Flax has strong competition with other important winter crops such as wheat, bean and clover on the limited cultivation area. Therefore, it was introduced recently at the new reclaimed area of the eastern and western deserts. Consequently, it is well acquainted that flax production areas are distributed in various geographical regions.

Flax plays an important role in the Egyptian national economy. It is a versatile crop that contributes for many products manufactured from fibers, shives and seeds. Flax fiber is early used in manufacturing various kinds of textiles and twines and thereafter, it is used in the manufacture of high-grade paper. The woody part of flax stem, which is called after breaking "flax shives" is a good raw material for the developing and widely used particle boards industries. Flax seeds are considered as a traditional source of industrial vegetable oil and it is the main stay of the oil-based paints, varnish and linoleum industries. Oil of flax seeds has a high content of the rapidly oxidized fatty acid (linolenic) which gives high grade of drying