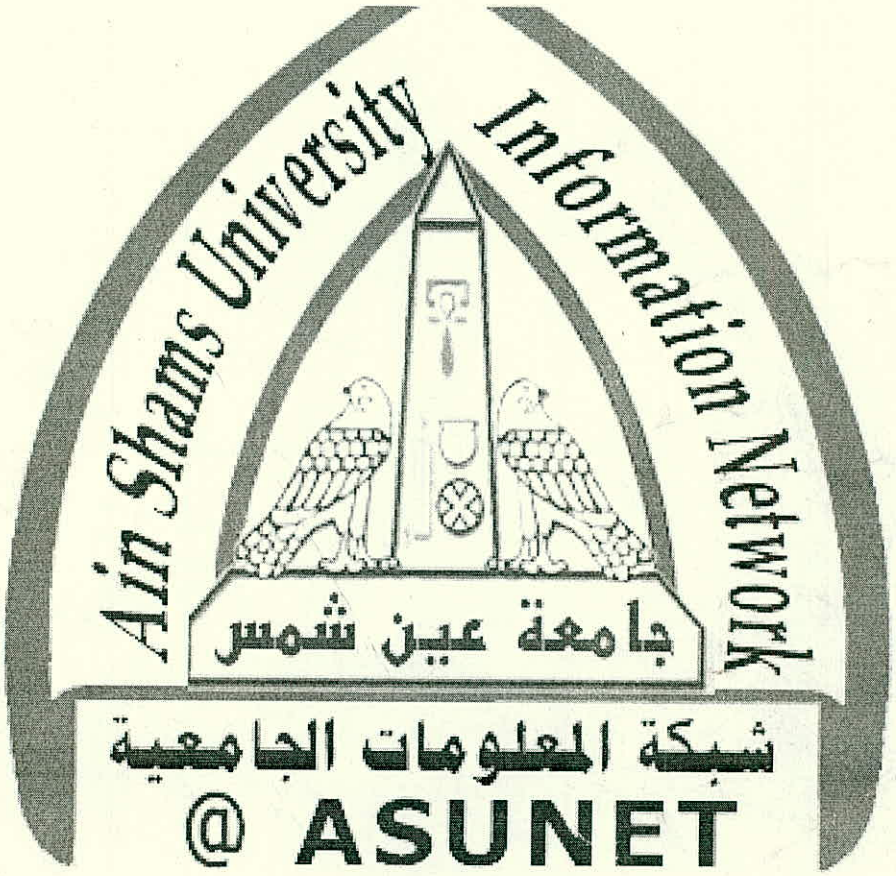
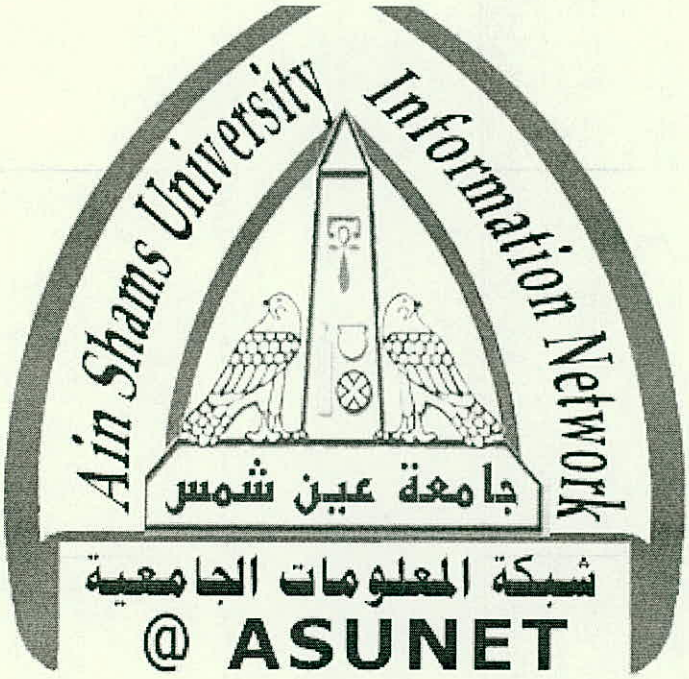
شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم





شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

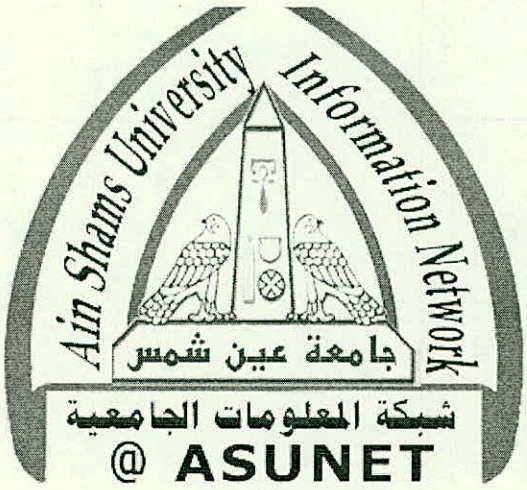
شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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

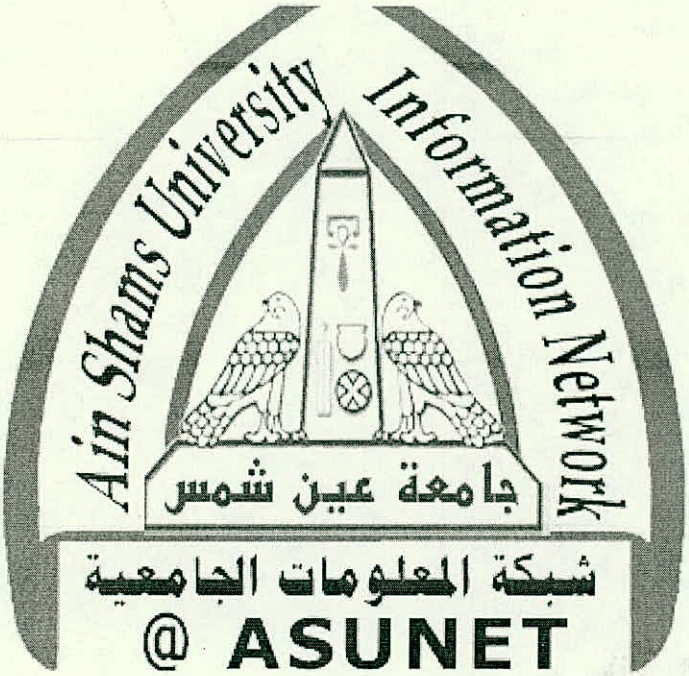


يجب أن

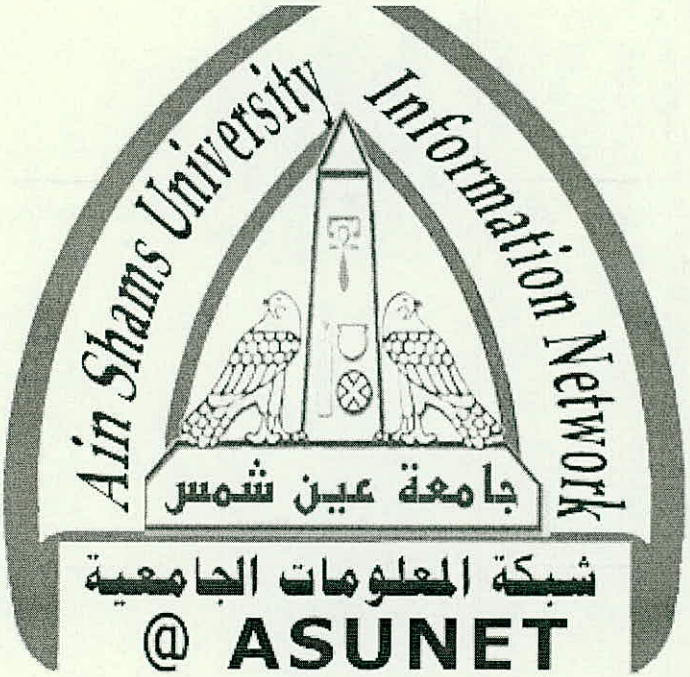
تحفظ هذه الأفلام بعيداً عن الغبار

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

STUDIES ON PRODUCTIVITY OF BEAN PLANTS UNDER ENVIRONMENTAL STRESS CONDITIONS

BY

WAEL ABDEL-KADER EL-TOHAMY
B. Sc. Agric Sci. (Horticulture), Ain Shams Univ., 1990
M. Sc. Agric. Sci. (Veg. Crops), Ain Shams Univ., 1995

Thesis submitted in partial fulfillment
of
The requirements for the degree of

DOCTOR OF PHILOSOPHY
in
AGRICULTURE SCIENCE
(VEGETABLE CROPS)

Department of Horticulture
Faculty of Agriculture
Ain Shams University

2000

APPROVAL SHEET

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This thesis for Ph.D. degree has been approved by:

Prof. Dr. Maher A. Wally M.A. Wally
Prof. of Horticulture.
Faculty of Agriculture, Al-Azhar University.

Prof. Dr. Khalifa A. Okasha .....
Prof. of Horticulture.
Faculty of Agriculture, Ain Shams University

Prof. Dr. Ayman F. Abou-Hadid (Supervisor) .....
Prof. of Horticulture
Faculty of Agriculture, Ain Shams University

Date of examination 26 / 1 /2000

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Under the supervision of:

Prof. Dr. Ayman F. Abou-Hadid
Prof. of Horticulture, Fac. of Agric.,
Ain Shams University

Prof. Dr. Sayed M. Singer
Prof. of Horticulture.
National Research Center

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ABSTRACT

Wael Abdel-Kader El-Tohamy, Studies on productivity of bean plants under environmental stress conditions., Unpublished Doctor of Philosophy Dissertation, Horticulture (Veg. Crops), Fac. of Agric., Ain Shams Univ., 2000.

The aim of the study was to improve growth and productivity of Snap bean (*Phaseolus vulgaris* L.) under environmental stress conditions such as chilling, drought and high temperature. Low tunnels, plastic mulch and spraying with $CaCl_2$ or KCl were used to protect bean plants during winter season. The experiments also aimed to study the effect of vesicular arbuscular mycorrhiza on drought and chilling tolerance of bean plants and to evaluate tolerance of local and imported bean varieties under drought and heat stress conditions. Long-term water stress was also studied under different water stress levels. Plant growth, yield, water relations and several physiological parameters were examined under stressful conditions. The results showed that the combination of low tunnels with spraying with $CaCl_2$ or KCl had the highest growth and yield compared with other treatments during winter season. Giza 3 and Flexo varieties showed higher drought and heat tolerance than the other varieties. The results indicated that the inoculation with mycorrhiza had positive effects on drought and chilling tolerance of bean plants. The effects of the treatments on bean growth, productivity and the physiological parameters under stress conditions are discussed.

Key words: Snap bean, Phaseolus vulgaris, $CaCl_2$, KCl, low tunnels, mulch, chilling, water stress, heat stress, mycorrhiza, leaf water potential, stomatal conductance, long-term water stress, yield, varieties.