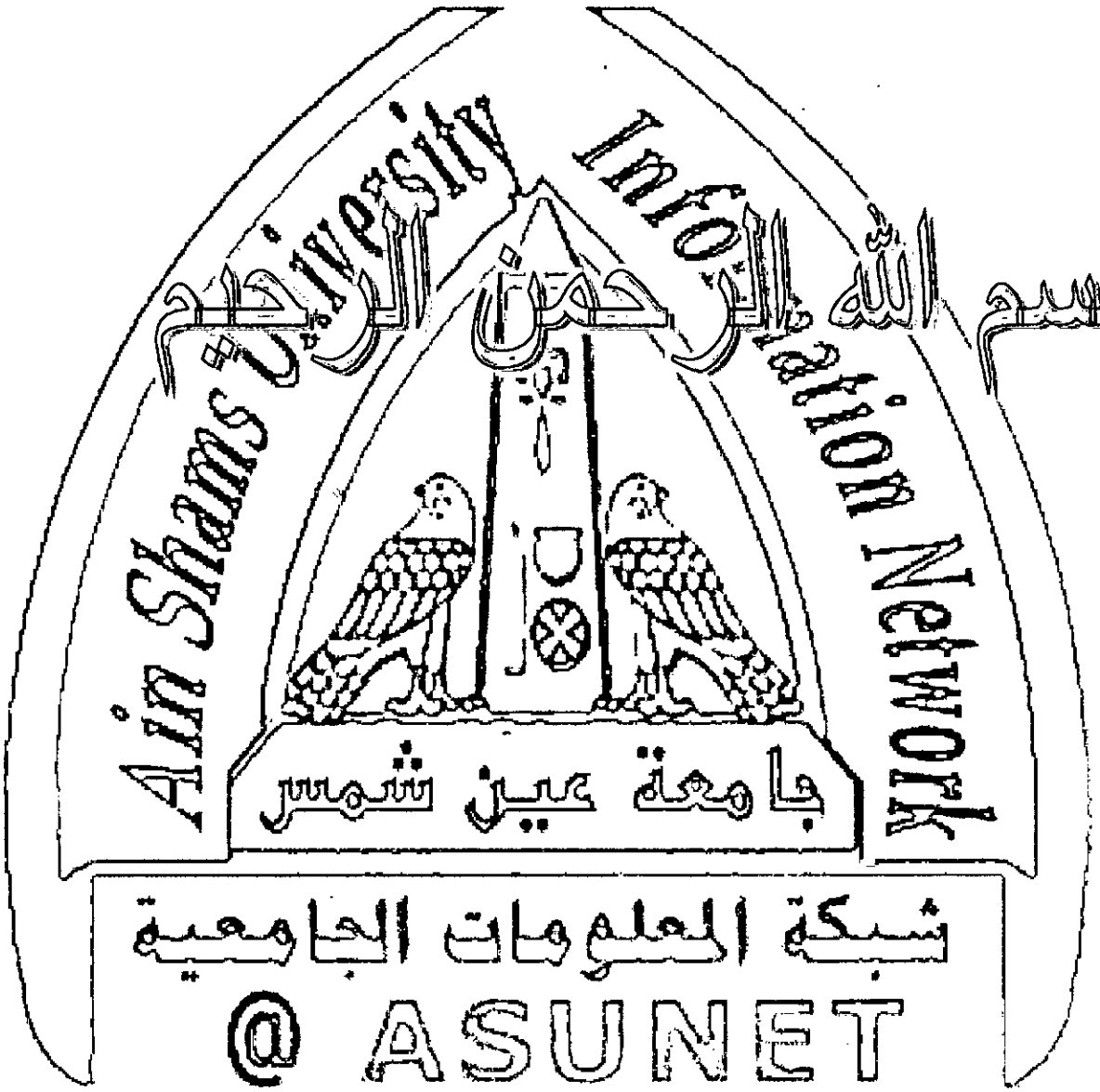
شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

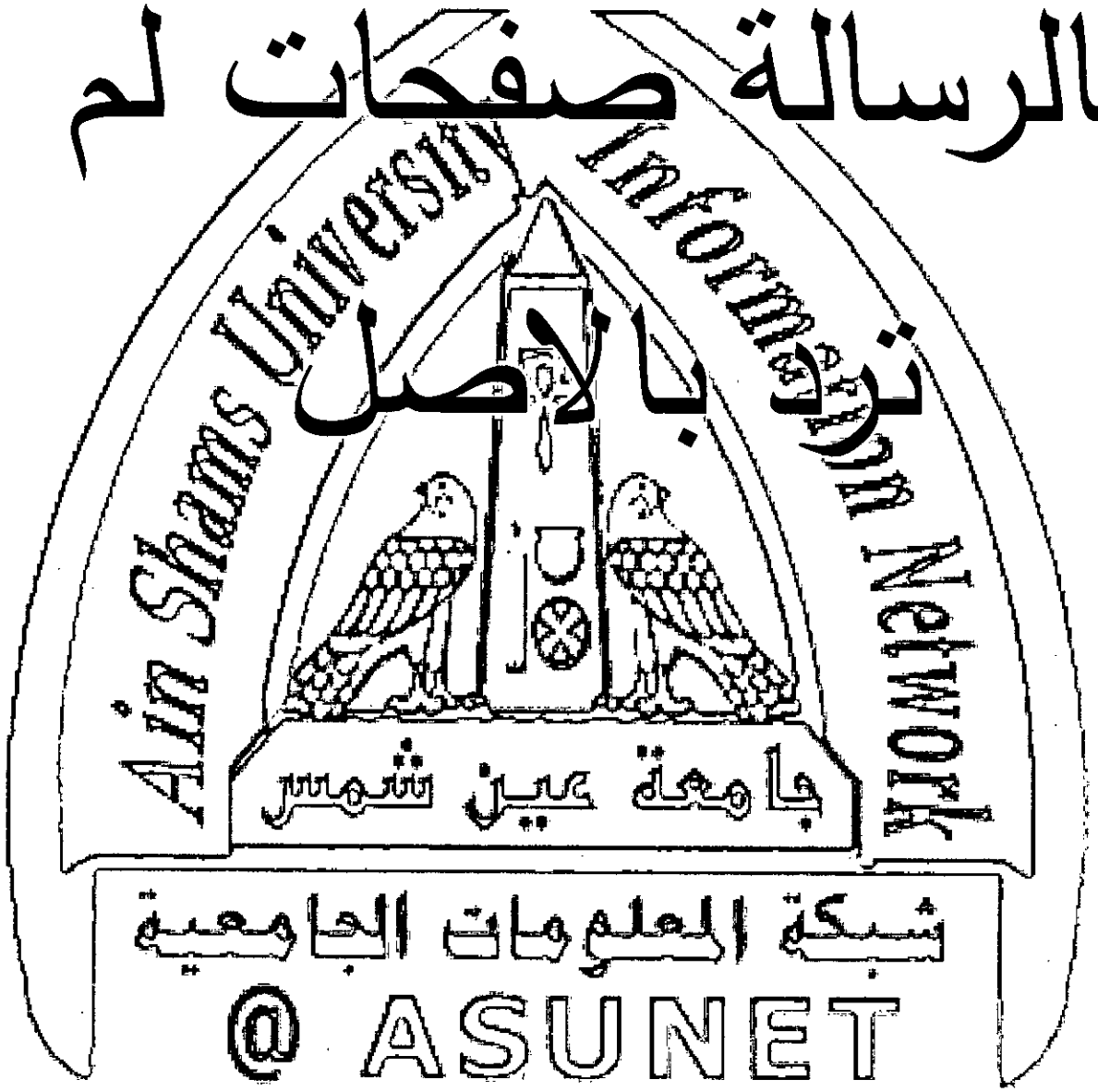
نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

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%

بالرسالة صفحات لم تردبالأصل



بعض الوثائق الأصلية تالفة

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EFFECT OF SOME POLLUTANTS ON *Brassaia arboricola* var. *variegata* L. AND *Ficus microcarpa* var. *hawaii* L.

BY

Amira Fathy Youssef El-Kady

B.Sc. Agric., (Hort.), Cairo University, 1997

M.Sc. Agric., (Hort.), Cairo University, 2001

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

IN

Agricultural Science

(Ornamental Horticulture)

Ornamental Horticulture Department

Faculty of Agriculture

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Cairo University

2005

Committee in charge
Date: 23 / 6 / **2005**

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Name of Candidate...Amira Fathy Youssef El- Kady.....Degree Ph. D.....
Title of Thesis..EFFECT OF SOME POLLUTANTS ON.....
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.....Prof. Dr. Mahmoud Ahmed Salem.....
Department.....Ornamental Horticulture Dep., Fac. of Agric., Cairo Univ....
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ABSTRACT

The present study was carried out during 2002/ 2003 at the greenhouse of the Ornamental Horticulture Department, Faculty of Agriculture, Cairo University. *Brassaia arboricola* var. 'variegata' and *Ficus microcarpa* var. 'Hawaii', 25 cm height, were transplanted in 25 cm plastic pots containing a mixture of peat moss and sand (1:1 V/V) and treated with aluminium nitrate [$Al(NO_3)_3$], nickel nitrate [$Ni(NO_3)_2$], or lead nitrate [$Pb(NO_3)_2$] at concentrations of 0, 5, 10 or 20 ppm in the first season and 0, 10, 20, or 40 ppm in the second season, in addition to the combination of metals at the same concentrations, by dissolving their respective atomic weights in tap water, to determine the tolerance of *Brassaia arboricola* var. 'variegata' and *Ficus microcarpa* var. 'Hawaii' plants to various concentrations of the three pollutants and the plant ability to be cultured in contaminated areas. The plants were irrigated with the polluted water (500 ml/pot) once every two weeks for 4 and 8 months.

The data recorded on *Brassaia arboricola* var. 'variegata' showed that, in the first season, the combination of Al, Ni and Pb at 5 ppm produced the highest plants, whereas Pb at 20 ppm produced the shortest plants. In the second season, Pb at 10 and 20 ppm produced the highest plants whereas, irrigating the plants with the combination of Al, Ni and Pb at 40 ppm produced the shortest plants. Pb at 5 ppm produced the longest roots, whereas the combination at 20 ppm produced the shortest roots, in the first season. In the second season, on the other hand, the shortest roots were obtained from Pb at 40 ppm. Ni at 20 and 40 ppm in the first and second season, respectively had a remarkable effect in decreasing chlorophyll *a*, chlorophyll *b*, and total carotenoids. Al and Ni either alone or combined with the other pollutants at 20 and 40 ppm in the first and second season, respectively concentrated in the root. On the other hand, Pb at 20 and 40 ppm either alone or combined in the first and second season, respectively accumulated mostly in the leaf.

On *Ficus microcarpa* var. 'Hawaii' the data indicated that the highest plants were obtained from the combination at 5 and 10 ppm in the first and second season, respectively. Meanwhile, the shortest plants were produced from Pb at 40 ppm in the second one. The longest roots in the first season were produced by the combination at 5 ppm. In the second season the longest and shortest roots were produced by the combination at 10 ppm and Pb at 40 ppm, respectively. The least contents of chlorophyll *a*, *b* and total carotenoids were produced by Pb at 20 ppm in the first seasons and by Ni at 40 ppm in the second one. Al and Ni either alone or combined with the other pollutants at 20 and 40ppm in the first and second season, respectively concentrated in the root. On the other hand, Pb at 20 and 40 ppm either alone or combined in the first and second season, respectively accumulated mostly in the leaf.

The present study suggests that both *Brassaia arboricola* var. 'variegata' and *Ficus microcarpa* var. 'Hawaii' plants can tolerate various concentrations of Al, Ni and Pb.

Atef Z. Sarhan

ACKNOWLEDGMENT

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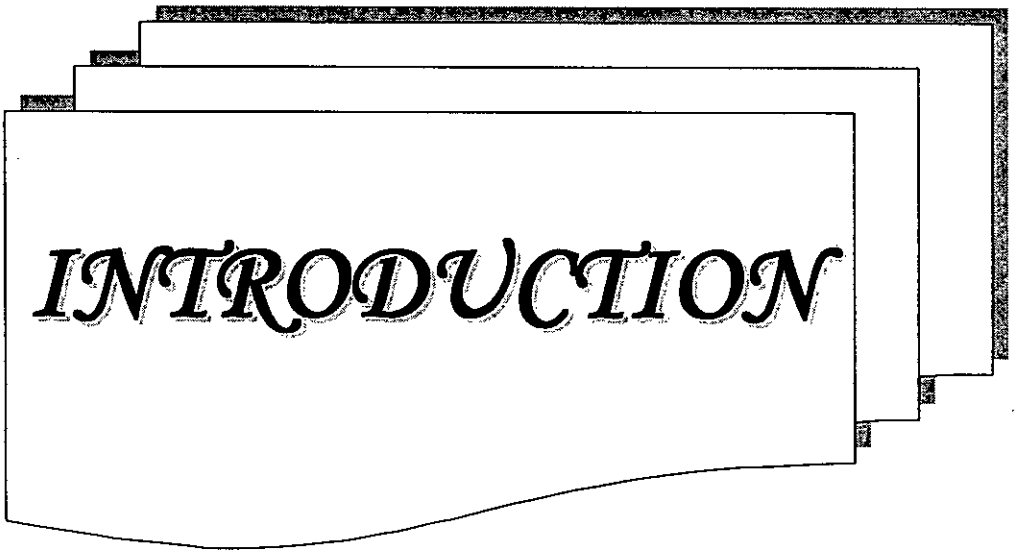
CONTENTS


INTRODUCTION

INTRODUCTION

The natural environment of living organisms and the complex biological epidermis of the Earth is called the biosphere. In general, the biosphere consists of three main ecosystems: the land environment, the fresh water environment, and the marine environment. Man's impact on the biosphere has been very complex, and most often has led to irreversible changes. Changes introduced and/ or stimulated by man have accumulated extremely quickly in recent years. All man-made changes disturb the natural balance of each ecosystem that has been formed evolutionarily over a long period of time. Environmental pollution, especially by chemicals, is one of the most effective factors in the destruction of biosphere components. It was suggested that when the rate of an element exceeds the natural rate of its cycling by a factor of ten or more, the element must be considered a potential pollutant **(Kabata- Pendias and Pendias, 2001).**

Water is the most vital natural resource in both biological and chemical reactions. Pollutants nowadays are presented in natural water and their sources are associated with