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

Effect of Irrigation Water Quality and Soil Amendments on Physico-Chemical Properties of Some Egyptian Soils

By

Ahmed Ibrahim Mohamed Ahmed
B.Sc. Agricultural Sciences (Soils and Water) 1994
M.Sc. Agricultural Sciences (Soils) 2000

Thesis

Submitted in Partial Fulfillment of the
Requirements for the Degree
Of
Doctoral of Philosophy

In
Agricultural Sciences
(Soils)

To
Soil and Water Department
Faculty of Agriculture
Suez Canal University
2006

Effect of Irrigation Water Quality and Soil Amendments on Physico-Chemical Properties of Some Egyptian Soils

By

Ahmed Ibrahim Mohamed Ahmed
B.Sc. Agricultural Sciences (Soils and Water) 1994
M.Sc. Agricultural Sciences (Soils) 2000

Thesis

Submitted in Partial Fulfillment of the
Requirements for the Degree
Of
Doctoral of Philosophy

In
Agricultural Sciences
(Soils)

To
Soil and Water Department
Faculty of Agriculture
Suez Canal University

2006

APPROVAL SHEET

Effect of Irrigation Water Quality and Soil Amendments on Physico-Chemical Properties of Some Egyptian Soils

Ph.D. Thesis

By

Ahmed Ibrahim Mohamed Ahmed
B.Sc. Agricultural Sciences (Soils and Water) 1994
M.Sc. Agricultural Sciences (Soils) 2000

APPROVED BY

Prof. Dr. Saber Abdou Gaheen .....
Prof. of soil science
Faculty of Agriculture
Kafer Alshikh University

Prof. Dr. Samier Abd El-Wahab Abou El-Roos .....
Prof. of Soil Science
Faculty of Agriculture
Cairo University

Prof. Dr. Ozoris Mohamed Ali .....
Prof. of Soil Science
Faculty of Agriculture
Suez Canal University

Prof. Dr. Mohamed Ahmed Nasr .....
Prof. of Soil Science
Faculty of Agriculture
Suez Canal University

Date: 15 / 11 /2006

Name	Ahmed Ibrahim Mohamed Ahmed
Title	Effect of Irrigation Water Quality and Soil Amendments on Physico-Chemical Properties of Some Egyptian Soils
Faculty	Agriculture- Ismalia
Department	Soil and Water
Location	Suez Canal University
Degree	Doctor of Philosophy
Date	15 / 11 / 2006
Language	English
Supervision Committee	Prof. Dr. Ozoris Mohamed Mohamed Ali Prof. Dr. Mohamed Ahmed Nasr Matloub Prof. Dr. Abdel Monem Mahmoud Zayed

Abstract

A lysimeter experiment was carried out, to study the effect of organic and inorganic soil amendments, and saline irrigation water, on some physical and chemical properties of calcareous, alluvial and sandy soils, as well as, the plant growth and its chemical composition. The application of soil amendments significantly, decreased the soil bulk density and the modulus of rupture, in each of surface and subsurface soils, while, salinity of irrigation water upto 6000 ppm, increased them. Soil hydraulic conductivity of surface and subsurface soils significantly increased, under application of soil amendments with Nile water (control). While, significantly decreased with different salinity levels of irrigation water. The application of soil amendments decreased ECe, SAR, ESP and swelling factor, while these parameters were increased with increasing salinity levels in the irrigation water. The determined leaching fraction decreased with the application of soil amendments, relative to the estimated leaching fraction, and increased with increasing salinity levels in the irrigation water.

The application of soil amendments and salinity in the irrigation water increased the NPK availability in different soils. The saline irrigation water upto 6000 ppm, decreased the fresh and dry weights of alfalfa and sorghum plants. The efficiency of soil amendments on reducing salinity hazard on the fresh and dry weights of alfalfa and sorghum plants could be arranged as follows: (1) sulphur > town refuse > sewage sludge for calcareous soil. (2) Town refuse > sewage sludge > sulphur for alluvial soil, and (3) sewage sludge > town refuse > sulphur for sandy soil. Results also showed that, the elemental sulphur was the best soil amendments for increasing NPK and Na content, and total uptake of alfalfa and sorghum plants cultivated in calcareous soil. While, the town refuse and sewage sludge were the best for alluvial and sandy soils.

Key words: water salinity, sewage sludge, town refuse, sulphur, soil physical and chemical properties, alfalfa, sorghum, NPKand Na content and total uptake.

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

The author wishes to express his sincere gratitude, and deepest appreciation to the principal advisor **Prof. Dr. OZORIS MOHAMED ALI,** professor of soil science, Faculty of Agriculture, Suez Canal University, for his careful continuous supervision, selecting the problems of this study, guidance and continuous encouragement, and valuable help in accomplishing the study.

Gratitude's are also due to **Prof. Dr. MOHAMED AHMED NASR,** professor of soil science, soil & water Department, Faculty of Agriculture, Suez Canal University, for his efforts and sincere help, in providing all needed facilities and his supervision in this study.

Thanks are also due to **Prof. Dr. ABDEL MONEAM ZAYED,** professor of soil science, soil & water Department, Faculty of Agriculture, Suez Canal University, for providing early supervision before his departure to Libya.

Special thanks are also due to all **STAFF MEMBERS** of Soil and Water Department, Faculty of Agriculture, Suez Canal University, for helpful co-operation, and supplying all facilities to accomplish this investigation.

Contents

List of Tables