



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون أية 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 %



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات
لم ترد بالأصل

MINERALOGICAL STUDIES ON SOME SOILS OF SINAI PENINSULA

BY

Abdel Raouf Abdel Halim Abdel Latif

B.Sc. Agric. Sci (Soils), Ain Shams University 1965.

M.Sc. Agric. Sci (Soils), Ain Shams University 1975.

A thesis

Submitted in partial fulfillment of the
requirements for the degree

of

Doctor of Philosophy

In

Soil Science

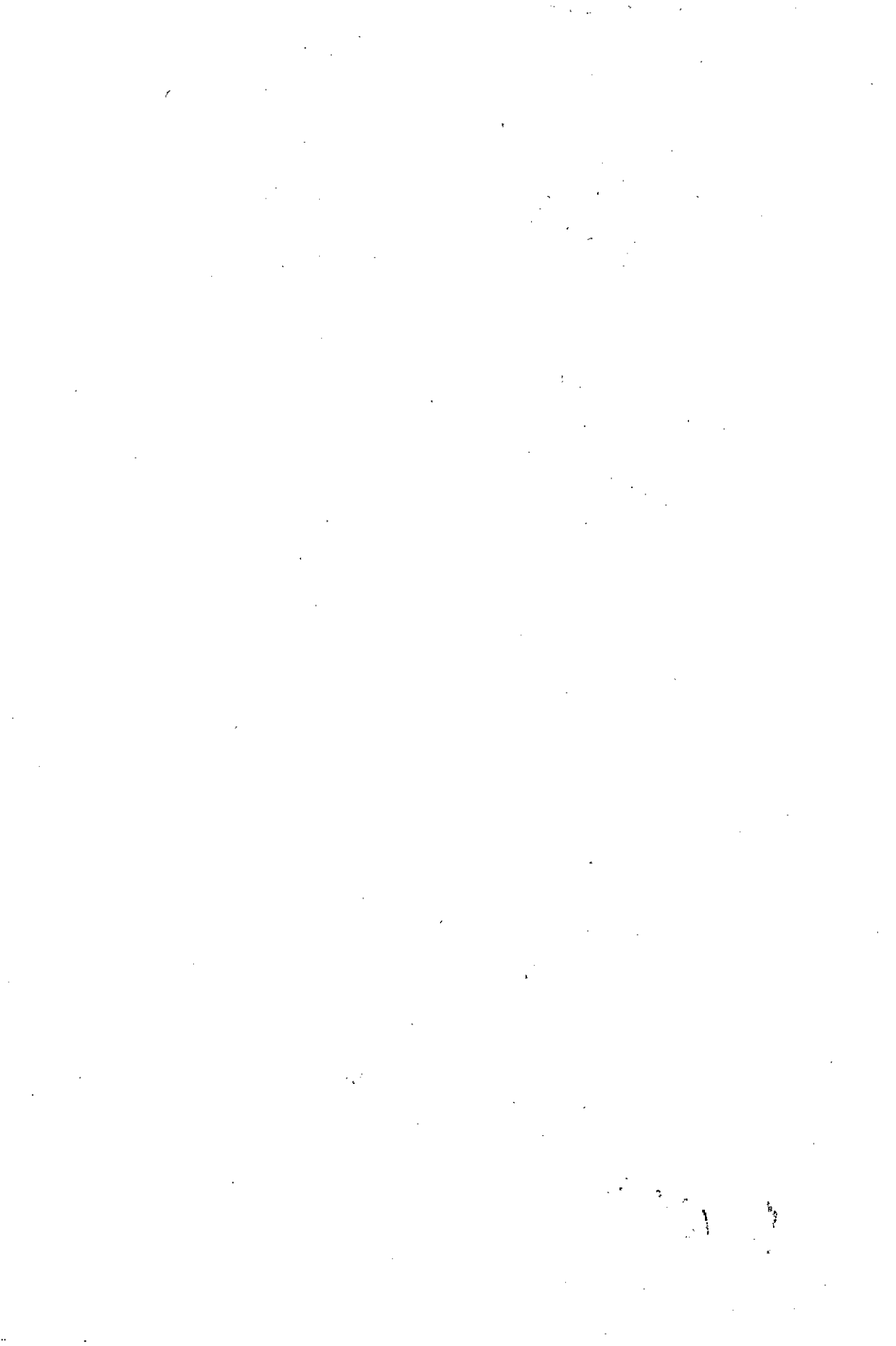
Department of Soil Science

Faculty of Agriculture at Moshtohor

Zagazig University

(Benha branch)

B 1722 2001



MINERALOGICAL STUDIES ON SOME SOILS OF SINAI PENINSULA

BY

Abdel Raouf Abdel Halim Abdel Latif

B.Sc. Agric. Sci (Soils), Ain Shams University 1965.

M.Sc. Agric. Sci (Soils), Ain Shams University 1975.

Under Supervision:

Prof. Dr. H.H. Abbas *H. H. Abbas*

*Prof. of Soil Sci., Fac. of Agric., Moshtohor,
Zagazig University (Benha branch).*

Prof. Dr. H. H. Hassona *H. H. Hassona*

*Prof. of Soil Sci., Soil, Water & Environ.
Res. Instit., ARC, Giza, Egypt.*

Department of Soil Science

Faculty of Agriculture at Moshtohor

Zagazig University

(Benha branch)

Approval Sheet

“MINERALOGICAL STUDIES ON SOME SOILS OF SINAI PENINSULA”.

By

Abdel Raouf Abdel Halim Abdel Latif

B.Sc. Agric. (Soil Sci.), Ain Shams University, 1965

M.Sc. Agric. (Soil Sci.), Ain Shams University, 1975

This thesis for (Ph.D.) degree has been Approved by:

- **Prof. Dr. H. H. Abbas** ... *H. H. Abbas*
Prof. of Soil Sci. Moshtohor, Zagazig. University,
Benha Branch.

- **Prof. Dr. M.E. Ali** ... *M.E. Ali*
Prof. of Soil Sci. Moshtohor, Zagazig University, Benha
Branch.

- **Prof. Dr. H. H. Hassona** ... *H. H. Hassona*
Prof of Soil Survey Dept. Soil, Water & Environment
Res. Institute, ARC.

- **Prof. Dr. S. El. Demerdashe** ... *S. El. Demerdashe*
Prof of Soil Sci. Des. Res. Center

(Committee in charge)

Date of Examination: 29 / 12 / 2001.

2000-2001-00

ACKNOWLEDGEMENT

The author wishes to express his appreciation and gratitude to **Prof. Dr. H. H. Abbas** Professor of Soil Science, Faculty of Agriculture, at Moshtohor and **Dr. H. H. Hassona** Professor of Soil Science, Soil Survey Department, Soil, Water and Environment Institute, Agricultural Research Center, for their valuable advice, Supervision and Constructive Criticism throughout the preparation of the manuscript.

Deep appreciation should be expressed to all the staff members of the Department soil science faculty of Agriculture, at Moshtohor for their interest and help.

Special gratitude is extended to all the staff members in Soil, Water and Environment Research Institute (SWERI) for providing the field and laboratory facilities for investigation.

CONTENTS

	Page
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	2
2.1. Geography of Sinai Peninsula	2
2.1.1. Location	2
2.1.2. Climate.....	2
2.1.2.1. Temperature	4
2.1.2.2. Precipitation	4
2.1.2.3. Relative humidity	4
2.1.2.4. Evaporation	6
2.1.2.5. Wind.....	6
2.1.2.6. Climate indices	6
2.2. Natural vegetation and land use	8
2.2.1. Communities of El-Qaa Plain	10
2.2.2. Communities of Wadi El-Brouk	11
2.3. Geomorphology	12
2.3.1. Geomorphic units of El-Qaa plain	12
2.3.2. Geomorphology of Wadi El-Brouk	16
2.4. Geology	19
2.4.1. Geology of El-Qaa plain	20
2.4.2. Geology of Wadi El-Brouk	24
2.5. Soil characteristics	27
2.5.1. Some physical and chemical properties of the studied soils	27
2.5.2. Soil mineralogy	31
2.5.2.1. Mineralogy of the sand fraction ...	31
2.5.2.2. Mineralogy of the clay fraction	33
2.5.3. Soil classification	35
3. MATERIALS AND METHODS	37
3.1. Soil sampling	37
3.2. Method of analysis	37
3.2.1. Physical and chemical analysis	37
3.2.2. Separation of the sand and clay fraction	41
3.2.3. Mineralogical analysis of the sand fraction	41
3.2.4. Mineralogical analysis of the clay fraction.	42
3.3. Soil Classification	42
3.4. Land evaluation	42

	Page
4. RESULTS AND DISCUSSIONS	43
4.1. Soil characteristics	43
4.1.1. Soils of El-Qaa plain	43
4.1.2. Soils of Suez basin	52
4.1.3. Soils of Wadi El-Brouk	61
4.2. Exchangeable properties	70
4.2.1. Cation exchange capacity (CEC)	70
4.2.2. Exchangeable Cations	74
4.3. Amorphous inorganic materials	75
4.4. Statistical size parameters	80
4.4.1. Soils of El-Qaa plain	80
4.4.2. Soils of Suez basin	86
4.4.3. Soils of Wadi El-Brouk	90
4.5. Mineralogical analyses of clay fraction	96
4.5.1. Clay mineralogy of El-Qaa plain soils	109
4.5.2. Clay mineralogy of Suez basin soils	115
4.5.3. Clay mineralogy of Wadi El-Brouk soils	115
4.6. Surface area of the clay fraction	116
4.7. Cation exchange capacity of the clay fraction	117
4.8. Mineralogical analysis of the sand fraction	117
4.8.1. Light minerals	121
4.8.2. Heavy minerals	123
4.8.3. Uniformity of soil materials	130
4.9. Soil classification	140
4.9.1. Soils belonging to the order Entisols	140
4.9.2. Soils belonging to the order Aridisols	142
4.10. Land evaluation	144
5. SUMMARY	147
6. REFERENCES	153
7. ARABIC SUMMARY	