

CONTENTS

=====

PART I

INTRODUCTION

=====

	Page
PREFACE	1
REFIEW OF LITERATURE	4
METHODS OF ANALYSIS	12
I-Vegetation analysis	12
a-Quadrats	12
b-Stands.....	14
II-Plant analysis	15
1-Plant moisture content	16
2-Succulence	16
3-Ash content	16
4-Elemental analysis of ash	16
5-Carbohydrate contents	16
a-Estimation of total carbohydrates	16
b-Estimation of direct reducing value	17
c-Estimation of total reducing value	17
d-Estimation of polysaccharides	17
6-Nitrogen contents	18
a-Total nitrogen	18
b-Soluble nitrogen	18
c-Insoluble nitrogen	19
7-Investigation of amino acids	19
8-Investigation of fatty acids	19
a-Extraction of lipids	19
b-Fatty acid composition	19

*Preparation of the fatty acids methyl esters	20
*Analysis of methyl ester of fatty acids..	20
III-Soil analysis	21
A-Sampling	21
B-Physical properties	21
1-Soil moisture	21
2-Soil texture	21
C-Chemical properties	21
1-Total soluble salts	22
2-Chlorides	22
3-Sulphates	22
4-Carbonates and bicarbonates.....	22
5-Calcium carbonate	23
6-Organic carbon.....	23
7-pH-value	23
8-Electric conductivity.....	23

PART II

RESULTS AND DISCUSSION

=====

THE STUDY AREA	24
1-The costal plain sector	24
a-Littoral salt marsh	24
b-Inland coastal plain	26
2-Ayoun Musa sector	26
a-Swamps	26
b-Salt marshes	27
3-Wadi Sudr sector	27

4-El-Heitan sector	29
CLIMATE	30
-Climatic aridity	34
I-PHYTOSOCIOLOGICAL STUDIES	36
- Plant communities	37
1-Halophytic communities	37
2-Glycophytic communities	38
-Vegetation of the coastal plain sector	39
*Vegetation of littoral salt marsh.....	39
* <u>Halocnemum strobilaceum</u> community type	39
A-Analytic characters	41
B-Synthetic characters	46
C-Habitat characters	49
*Vegetation of inland coastal plain	51
1- <u>Zygophyllum coccineum</u> community type.....	51
A-Analytic characters	52
B-Synthetic characters	55
C-Habitat characters	60
2- <u>Anabasis articulata</u> community type.....	61
A-Analytic characters	65
B-Synthetic characters	67
C-Habitat characters	70
*Vegetation of Ayoun Musa sector	73
1-Vegetation of swamps	73
2-Vegetation of wet salt marshes	73
* <u>Juncus rigidus</u> community type	73
A-Analytic characters	75

B-Synthetic characters	78
C-Habitat characters	83
3-Vegetation of dry salt marshes	85
a- <u>Cressa cretica</u> community type	85
A-Analytic characters	87
B-Synthetic characters	87
C-Habitat characters	91
b- <u>Alhagi maurorum</u> community type.....	93
A-Analytic characters	94
B-Synthetic characters	97
C-Habitat characters	102
c- <u>Nitruria retusa</u> community type	103
A-Analytic characters	105
B-Synthetic characters	108
C-Habitat characters	113
d- <u>Tamarix nilotica</u> community type	114
A-Analytic characters	115
B-Synthetic characters	118
C-Habitat characters	123
*Vegetation of Sudr El-Heitan sector	125
1- <u>Reaumuria hirtella</u> community type.....	125
A-Analytic characters	127
B-Synthetic characters	130
C-Habitat characters	135
2- <u>Anabasis setifera</u> community type	137
A-Analytic characters	137
B-Synthetic characters	142

C-Habitat characters	145
*Vegetation of Wadi Sudr	147
1- <u>Hammada elegans</u> community type	147
A-Analytic characters	149
B-Synthetic characters	151
C-Habitat characters	154
2- <u>Lygos raetam</u> community type	156
A-Analytic characters	160
B-Synthetic characters	163
C-Habitat characters	168
3- <u>Tamarix nilotica</u> community type	169
A-Analytic characters	169
B-Synthetic characters	172
C-Habitat characters	177
II-Ecophysiological studies	179
i-Succulence	174
ii-Moisture content	182
iii-Ash content	183
iv-Elemental composition of Ash	185
1-Sodium	185
2-Potassium	186
3-Calcium	187
4-Magnesium	189
5-Phosphorus	190
6-Chlorides	191
v-Metabolic products	193
1-Carbohydrates and sugar fractions	193

a-Total carbohydrate	193
b-Total reducing value	195
c-Direct reducing value	197
d-Polysaccharides	198
2-Nitrogen contents	198
a-Total nitrogen	198
b-Insoluble nitrogen	200
c-Soluble nitrogen	201
d-Total amino acids	202
3-Fatty acids	202

PART III

GENERAL DISCUSSION

-General Remarks	222
Vegetation and Habitats	223
Littoral and inland salt marshes	223
Swamps	227
Sand plains	227
Wadis	229
-Echophysiological studies	231
The role of succulence in plant adaptation	231
General features of Ash and cation accumulation	235
General features of metabolic products	139
Fatty acids	241
-Classification according to ecological relationships	241
SUMMARY	2466
REFERENCES	252
ARABIC SUMMARY	