



CONTENTS

CONTENTS

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
I	INTRODUCTION	1
II	REVIEW OF LITERATURE ON NIGER <i>(Guizotia abyssinica</i> Cass.)	6
	1. Introduction	7
	2. History of genus	7
	3. Distribution	13
	4. Morphology	15
	5. Anatomy	16
	A) The young stem of niger	16
	B) Young root	18
	C) Leaf	18
	6. Cytology	19
	7. Composition of niger seed and its utility	20
	8. Cultural practices	23
	A) Adaptation	23
	B) Land preparation	23
	C) Cultivation	23
	D) Manuring	24
	E) Harvesting	25
	F) Diseases and pests of niger	25
	i) Diseases of niger	26
	ii) Pests of niger	27
	9. Crop Improvement	28
	A) Floral structure	28
	B) Pollination and Fertilization	28
	C) Breeding methods	29
	10. Physiological studies	29

CONTENTS (contd... 2)

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
III	BIOCHEMICAL CHANGES DURING GROWTH OF NIGER <u>(<i>Guizotia abyssinica</i> Cass)</u>	33
	1. Introduction	34
	2. Material and Methods	36
	3. Results and Discussion	37
	A) Organic constituents	37
	i) TAN (Titratable Acid Number)	37
	ii) Polyphenols	39
	iii) Chlorophylls	41
	iv) Nitrogen	42
	v) Carbohydrates	45
	B) Inorganic constituents	48
	i) Phosphorus	48
	ii) Potassium	49
	iii) Calcium	50
	iv) Magnesium	53
	v) Iron	55
	vi) Manganese	59
	vii) Silicon	60
	viii) Sodium	63
IV	SENESCENCE	65
	1. Introduction	66
	2. Material and Methods	77
	3. Results and Discussion	78
	A) Moisture percentage and organic constituents	78
	i) Moisture percentage	79
	ii) Chlorophylls	79
	iii) TAN (Titratable Acid Number)	80
	iv) Total nitrogen	80

(iii)

CONTENTS (contd... 3)

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
	v) Total polyphenols	82
	vi) Proline	83
	vii) Carbohydrates	83
B) Inorganic constituents		85
	i) Potassium	85
	ii) Calcium	86
	iii) Magnesium	87
	iv) Phosphorus	89
	v) Iron and Manganese	90
	vi) Silicon	90
	vii) Sodium	91
C) Photosynthesis		93
V	DROUGHT RESISTANCE (RESPONSES OF NIGER (<u>Guizotia abyssinica</u> Cass.) TO WATER STRESS)	95
	1. Introduction	96
	2. Material and Methods	99
	3. Results and Discussion	99
	A) Effect of water stress on organic constituents	99
	i) Moisture percentage	99
	ii) Total polyphenols	101
	iii) Total nitrogen	102
	iv) Proline	105
	v) Chlorophylls	109
	vi) TAN (Titratable Acid Number)	112
	vii) Carbohydrates	113
	B) Effect of water stress on inorganic constituents	116
	i) Sodium	117
	ii) Potassium	118

(iv)

CONTENTS (contd... 4)

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
iii) Calcium		120
iv) Magnesium		122
v) Phosphorus		123
vi) Manganese		125
vii) Iron		125
viii) Silicon		127
SUMMARY AND CONCLUSION		131
BIBLIOGRAPHY		138
STATEMENT - I		178
STATEMENT - II		179