



Ibrahim Lawal Abdullahi (Autor)  
**Typhaceae in the Kano River Irrigation Project (West)  
Zone and Management Issues**

**Typhaceae in the Kano River Irrigation  
Project (West) Zone and Management Issues**



**By**

**Ibrahim Lawal Abdullahi Ph.D**



**Cuvillier Verlag Göttingen**  
Internationaler wissenschaftlicher Fachverlag

<https://cuvillier.de/de/shop/publications/414>

Copyright:

Cuvillier Verlag, Inhaberin Annette Jentsch-Cuvillier, Nonnenstieg 8, 37075 Göttingen,  
Germany

Telefon: +49 (0)551 54724-0, E-Mail: [info@cuvillier.de](mailto:info@cuvillier.de), Website: <https://cuvillier.de>

## TABLE OF CONTENTS

Cover page	Page
Dedication	i
Acknowledgement	ii
Abstract	iii
Table of Contents	iv
List of Tables	v-vii
List of Figures	viii-x
List of Plates	xi
	xii-xiii

### CHAPTER ONE INTRODUCTION

1.1	BACKGROUND TO THE STUDY	1-2
1.2	STATEMENT OF THE PROBLEM	2-3
1.3	AIM AND OBJECTIVES OF THE STUDY	3-4
1.4	JUSTIFICATION FOR THE STUDY	4
1.5	THE STUDY AREA	4-7

### CHAPTER TWO LITERATURE REVIEW

2.1	IRRIGATED AGRICULTURE AND ENVIRONMENT	8-11
2.2	AQUATIC WEEDS FROM GLOBAL TO LOCAL SETTING	11-14
2.2.1	Plant Description and Identification	14-17
2.2.2	Type of <i>Typha</i> Species	18-21
2.3	DAMS AND IMPOUNDMENTS	21
2.3.1	Impact of Aquatic Weeds on Agriculture, Health and Environment	22-24
2.4	CONTROL OF <i>TYPHA</i> AQUATIC WEED	24-30
2.5	MANAGEMENT OF DAMS/IRRIGATION SYSTEM/AQUATIC ECOSYSTEM	30-32
2.6	PROCEDURE FOR SELECTING SAMPLING SITE	32
2.7	AN ANALYSIS OF THE KRIP OBJECTIVES AND STALKHOLDERS IN THE CONTEXT OF ECOLOGICAL CHANGES IN THE AREA AND ITS IMPACTS	32-34
2.7.1	Policy Analysis	34-35

### CHAPTER THREE MATERIALS AND METHODS

3.1	INTRODUCTION	36
3.2	TYPES OF DATA REQUIRED	36-37
3.3	SAMPLING TECHNIQUES AND SAMPLING SIZE	38
3.4	METHODS OF DATA COLLECTION	38
3.4.1	Selection of Sites and Collections of Specimen	38-39
3.4.2	Identification and Measurements of Plant Features	40
3.4.3	Determination of Relevant Environmental Parameters	40
3.4.4	Administration of Questionnaire and Informal Interview	40-42
3.4.5	Monitoring of <i>Typha</i> Control Activities	42
3.5	ANALYTICAL TECHNIQUES	42

### CHAPTER FOUR PRESENTATION AND DISCUSSION OF RESULTS

4.1	INTRODUCTION	43
4.2	MAJOR HABITATS OF <i>TYPHA</i> SP IN THE STUDY AREA	43-50
4.3	CHARACTERISTICS OF THE <i>TYPHA</i>	50-53
4.3.1	Identification of the KRIP <i>Typha</i> Species	54-55
4.3.2	Comparisons of Characteristics Features of Sampled Species with Some Identified <i>Typha</i> Species	56-58
4.4	WATER PARAMETERS INFLUENCING <i>TYPHA</i> GROWTH	58-60
4.4.1	<i>Typha</i> sp. Growth Responses to Water Depth Gradient in the Study Area	60-63
4.4.2	Mean Values of some Water Parameters from <i>Typha</i> sp. Habitats from April 2007 – 2008 in Kano River Irrigation Project	63-65
4.4.3	Graphical Presentation of Water Parameters Influencing <i>Typha</i> Growth in the Study Area	65-75
4.5	RESPONDENTS' SURVEY	75-81
4.5.1	<i>Typha</i> Control in the Study Area	82-85
4.6	ASSESSMENT OF THE CONTROL MEASURES ADOPTED AT KRIP	85-89
4.7	MARKETING OF <i>TYPHA</i> STALKS AND INCOME EARNED	89-94

**CHAPTER FIVE**  
**PROPOSAL FOR AN INTEGRATED ENVIRONMENTAL MANAGEMENT**

5.1	INTRODUCTION	95
5.2	NATURE OF THE APPROACH	95-98
5.3	THE NEED FOR AN INTEGRATED ENVIRONMENTAL MANAGEMENT APPROACH	98-99

**CHAPTER SIX**  
**SUMMARY, CONCLUSION AND RECOMMENDATIONS**

6.1	SUMMARY OF FINDINGS	100-102
6.2	CONCLUSION	102
6.3	RECOMMENDATIONS	103-104
	REFERENCES	105-114
	APPENDICES	115-142