DEDICATION

To my dear parents

ACNOWLEDGEMENTS

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List of contented

NO	Contented	page No
	Dedication	i
	Acknowledgements	ii
	List of contented	iii
	List of table	vi
	List of figure	vii
	List of appendix	viii
	Abbreviation	ix
	Abstract	x
	Abstract in Arabic	xi
	Chapter one	
	Introduction	1
1.1.	Problem statement and Justification	3
1.2.	Main Objective:	4
1.3.	Specific Objectives:	5
	Chapter two	
	Literature review	6
2.1.	Plant Tolerance to Pollution	6
2.2.	History of Waste Water Use for Irrigation	7
2.3.	The Use of Waste Water in Sudan	16
2.4.	Selected Tree Species in the Experiment	17
2.5.	Irrigation Water Quality	20
2.6.	Reuse of water	20
2.7.	Hazards and environmental aspects of wastewater use in agriculture	21
2.8.	Refinery Waste Water:-	21
2.8.1.	Oil Contaminated Water	21
2.8.2.	Sewage Water	22
2.9.	Reclaimed water	22
2.10.	Benefits of Reclaimed water	23
2.11.	Public health Concerns	24
2.12.	Distribution and emand	25
2.13.	Testing standards	25
2.14.	Potable uses	26
2.15.	Indirect Potable Reuse	27
2.16.	Unplanned Indirect Potable Reuse	27
2.17.	Space travel	28
2.18.	Treatment improvements	28
2.19.	Other alternatives	30
2.20.	Worldwide applications and acceptance of:	31
	Chapter three	

List of Figure

1.1	Location map of the study area.	2
1.2	The oxidation pond of KRC.	3
3.1	Field Trial	35
4.1	Height growth response of six different species of wastewater and tap water irrigation treatments in nursery for growth.	47
4.2	Diameter growth response of six different species of waste water and tap water irrigation treatments in nursery for growth.	48
4.3	Number of branches response of six different species of waste water and tap water irrigation treatments in nursery for growth	50
4.4	Number of leaves response of six different species of waste water and tap water irrigation treatments in nursery for growth.	51

List of Table

Table No		
4.1	Variation in growth characteristic of six tree species grown in the field for 15 months using waste refinery water.	40
4.2	ANOVA on growth characteristics of six tree species grown for 15 months in a field trial.	41
4.3	ANOVA on growth characteristic of six tree species irrigated with waste water and tap water for 8 months in a pot trial.	46
4.4	Variation in growth characteristics of six tree species grown in a pot trial and irrigated with waste and tap water for 8 months	49
4.5	Results of the soil analysis of the experimentation area	52
4.6	Discharge of waste water analysis Pond C.	53

List of Appendixs

Appendix A	Analysis Results of Total Discharge Water2008	59
Appendix B	Analysis Results of Total Discharge Water 2009	64
Appendix C	Meteorological Monitoring	70
Appendix D	KRC .Location Map	76

List of Abbreviation

NO	abbreviation	Means
1	ABC	Agricultural Biotechnology Center
2	ANOVA	Analysis Of Variance
3	AWWA	American Water Works Association
4	BOD	Biochemical Oxygen Demand
5	CRBD	Completely Randomize Block Design
6	CRC	Cooperative Research Centre
7	CRD	Completely Randomize Design
8	CSIRO	Commonwealth Scientific and Industrial Research Organization
9	CSSRI	Central Soil Salinity Research Institute
10	ECLSS	Environmental Control and Life Support System
11	EDTA	Ethylene Diamante Trace tic Acid
12	FAO	Food and Agriculture Organization
13	IPU	Indirect Potable Use
14	KRC.	Khartoum Refinery Company
15	NAP	National Assessment Program
16	NASA	National Aeronautics and Space Administration
17	NEERI	National Environmental Engineering Research Institute
18	NRC	National Research Council
19	PCR	Polymerase Chain Reaction
20	PUB	Public Utilities Board
21	RCBD	Randomized Complete Block Design
22	SAS	Science Analysis System
23	UF	University of Florida
24	WPCA	Water Pollution Control Authority
25	WST	Water Survival Training
26	WSUD	Water Sensitive Urban Design

Abstract

The present work investigate the suitability of the discharged waste water from the Khartoum Refinery company (KRC) facility of Elgili located at about 73 km north of Khartoum .

The objective of the study is to dispose of the waste water discharge of Khartoum refinery using suitable tree crops.

Six different tree species are selected this tree is: *Acacia tortilis, Eucalyptus camadulensis, Azadirachta indica, Grewia tenax, Eugenia Jambolana* and *Conocarpus erectus*

Two experiments were conducted, the first experiment was a pot nursery experiment where the same six tree species were irrigated with either refinery waste water and tap water. The treatment was replicated three times.

The second was a field trial experiment, where six different trees species both indigenous and exotics were used (ACRBD). A design was used with four replications.

In addition a chemical and physical soil analysis was undertaken including water soluble cations and anions, pH, EEC, OC, total N content and particle size distribution water analysis for BOD, pH, EC soluble cations and oil content was performed Measurement from the field and nursery pot experiment included total pant height root collar diameter number of leaves and number of branches. Date collected was subjected to analysis of variance and the statistical method system.

Results showed highly significant differences between the tree species treated with discharged refinery waste water in the field trail. The most

tolerant species to refinery waste water were *Concarpus erectus* and *Acacia tortilis* while the most sensitive was *Grewa tennax*

Generally the remainder of the species shows significant differences between them. Result from the nursery pot experiment followed the same trend in variation between the six tree species in addition to a significant variation between the two irrigation treatments.

The study recommends the planting of *Conocarpus erectus* and *Acacia tortillas* this for their tolerance to refinery waste water and their better performance and study and adaptation to the planting site

ملخص الدراسة

هذه الدراسة تبحث فى تـ قييم مدى ملاءمة التخلص من مياه النفط المعالجة من شركة مصفاة الخرطوم التى تـ قع على بعد 73 كلم تـ قريبا شمال الخرطوم لرى بعض أنواع الاشجار. حيث اجريت تجربتين، كانت الاولى تجربة الحضانات بالمشتل حيث تم إستخدام نوعين من المياه , المياه المعالجة والمياه العاديةفى ستة أنواع من النباتات تم أخذ الـ قراءات لها فى ثلاث مناسبات , التجربة الثانية تجربة حـ قلية إستخدم فيها نظام المربعات العشوائية الكاملة حيث تم إستخدام ستة أنواع من الاشجار المختلفه المحلية والمستجلبة على حدء سواء , مع اربع تكرارات .

بالاضافة الى ذلك تم إجراء تحليل كيميائى وأخر فيزيائي للتربة بما فى ذلك شوارد المياه الموجبة السالبة , درجة الحموضة , الكربون العضوى , مجموع محتوي النتروجين , حجم الجسيمات , تحليل توزيع الاكسجين المطلوب كيميائيا، قوة التوصيل الكهربائي، أيونات الشوارد الموجبة للذوبان ومحتوي الزيت .

الـ قياسات من الحـ قل والحضانات شملت الإرتفاع، الـ قطر، عدد الأوراق، وعدد الأفرع . تم تحليل المعلومات التى جمعت بواسطة نظام علم التحليل الإحصائي اصدار 1996 م .

أظهرت نتائج انوفا فرو قات إحصائية كبيره بين انواع الاشجار التى تم التعامل معها بواسطة المياه المعالجة، وكانت أكثر الأنواع تحملا هى الدمس السعودى والسيال بينما الأ قل تحملا هى هو الـ قضيم.

بصورة عامة أظهرت الأنواع الأخرى من الاشجار فرو قات ذات دلاله إحصائية مختلفة. كما أظهرت النتائج عند إستخدام نوعين من المياه اختلافات متفاوتة بين انواع الاشجار الستة .

أوصت الدراسة بزراعة الدمس السعودى والسمر نسبة لإعطاءهما معدل نمو جيد عند إستخدام المياه المعالجة ولملاءمتهم للبيئة المحيطة بالمنط قة .