

Dedication

To the Great Prophet Mohammed (Peace and prayers be upon him)

To my father's spirit

To my mother, brothers, sisters, family, and to my wife Ammna

Almugadam (with special) respect for encouragement and support.

Acknowledgement

I am greatly indebted to my supervisor Dr. Mohamed Abdo Desougi for his valuable guidance and support during the analysis and preparation of this dissertation. Deep and warm thanks are due to Dr. Farah Yousif Suliman, sincere thanks are due to the staff of the faculty of forestry and range science of Sudan university of science and technology for their help and full support. To all those who encouraged me for their efforts towards facilitation and cooperation in carrying out this research work.

List of content

Dedication	I
Acknowledgement	II
List of contents	III
List of Tables	V
List of Figurers	VII
English abstract	VIII
Arabic abstract	IX

Chapter (1)

Introduction	1
1.1 Location of the study area	2
1.2 Population	3
1.3 Climate	5
1.4 Topography	7
1.5 Soil	8
1.6 Vegetation	8
1.7 Land use	10
1.8 The problem	11
1.9 Objectives	12

Chapter (2) Literature review

2.1. General	13
2.2. Important of <i>Acacia senegal</i>	13
2.3. Gum Arabic and its uses	14
2.4. Increasing crops production	16
2.5. Fire wood and other wood products	17
2.6 Ecology	18
General	18
2.7. Distribution	20
2.8. Climate	21

2.9. Soil	23
2.10. Silviculture	24
2.11. Natural regeneration	26

Chapter (3) Material and Methods

3.1. General	28
3.2 Socio-economic Survey	28
3.3. Interviews	29
3.4. Reports	29

Chapter (4) Results and discussion

4.1. Socio-economic aspects	30
4.2. Reports	44
4.2.2. Meetings	45
4.3. Interviews	46
4.3.1. Official interviews	47
4.3.2. Semi-official interviews	47

Chapter (5) Conclusions and Recommendations

5.1. Conclusions	50
5.2 Recommendations	51
References	52
Appendix 1	54
Appendix 2	56

List of Tables

Table (1) Population distribution at different localities at Dilling province.....	4
Table (2) Shows annual rainfall for 25 years in Dilling	6
Table (3) Yearly production of some crops in Kordofan province Through the period 60/61 – 72/75.....	16
Table (4) shows that feddan production decreased in a dramatic manner.....	17
Table (5) below indicated the average annual rainfalls. For the period 1980/2004.....	21
Table (6) showed percentages of educated people	30
Table (7) Age grouping percentage	30
Table (8) Type of Sex	31
Table (9) Marital status	31
Table (10) Gum Arabic garden size	31
Table (11) Services provided by F.N.C.....	33
Table (12) Community Role in gum garden protection	34
Table (13) Cutting trees Practice	34
Table (14) Purposes of trees cutting	35
Table (15) Transportation means	35
Table (16) Marketing type	35
Table (17) Gum Arabic product cleaning	36
Table (18) Price differences	36
Table (19) Gum production problem	36
Table (20) Main food crops production	37
Table (21) Farming in system	37
Table (22) Crops production of respondents's main food	38
Table (23) Income source during dead seasons	40

Table (24) Causes of land use conflicts	40
Table (25) Extension services provided to the people	40
Table (26) Forest laws enforcement	41
Table (27) Pests that Hashab tree is subjected to	41

List of Figurers

Map No (1)	2
Map No (2)	3
Map No (3)	22
Plate (No. 1)	32
Plate (No.2)	33
Plate (No.3)	38
Plate (No.4)	39
Plate (No.5)	42
Plate (No.6)	42
Plate (No.7)	43
Plate (No.8)	48

Abstract

This study is conducted at North Dilling area (South Kordofan) to show the importance of *A. senegal* as a major species of Gum-Arabic belt rehabilitation at Dilling area in solving the problems of the traditional agricultural limited land.

Such as soil deterioration, clearance of the vegetative cover, to satisfy the needs of the farmers in providing them with main food crops fuel wood, building materials and other wood for different purposes.

The overall objectives of this study is to investigate and analyze the current condition of north Dilling locality traditional agricultural land, to identify the advantages and disadvantage of future development and to enrich the existing knowledge of the shifting cultivating traditional land at the study area and elsewhere in Sudan.

Literature was collected for the theoretical and practical work from the relative offices and stations beside literature.

The methodology used in this study included a questionnaire conducted to investigate the socio-economic aspects of the farmers. It showed what percentage from their main food that traditional cultivation was provided.

It explained what is importance of *A. senegal* to them and how they planted it in their limited agricultural land with crops.

Official, semi official and personal interviews were conducted, beside reports from relative departments specially forest department which showed willingness of the farmers in planting *A. senegal* tree and the role they were playing in planting *A. senegal* in their agricultural land before. The aim is to encourage the effective community participation in the rehabilitation of Gum Arabic belt at the study area.

ملخص الدراسة

أجريت هذه الدراسة في منطقة شمال الدلنج (ولاية جنوب كردفان) لتعزيز الأهمية الأساسية لشجرة الهشاب في إعمار حزام الصمغ العربي لحل مشاكل الأراضي الزراعية التقليدية المتمثلة في إزالة الغطاء النباتي وتدور خصوبة التربة . كما أن الدراسة أرادات أن تلبي حاجيات المزارعين بالمنطقة المتمثلة في نقص إنتاج المحاصيل الغذائية وتوفير احتياجات المزارعين من حطب الوقود والمباني والخدمات الأخرى للأخشاب .

هدفت الدراسة إلى التعرف على الظرف الحالي للزراعة التقليدية المتنقلة وتحديد أهم مسؤوليتها ومحاسنها وتحليل هذا الظرف من أجل التطوير وإيجاد حلول للمشاكل المتمثلة في نقص الخصوبة وتدور التربة وقلة الإنتاجية .

كما أن الدراسة هدفت لإضافة بعض المعلومات الخاصة بممارسة الزراعة المتنقلة بالمنطقة وجمع وعرض الأدبيات والجوانب العلمية السابقة عن زراعة أشجار الهشاب والزراعة المتنقلة من المكاتب والجهات ذات الصلة (إدارة الغابات – إدارة الزراعة المطيرية – مكتب المساحة . . . الخ) .

تم عمل استبيان للتعرف على الجوانب الاقتصادية والاجتماعية للمزارعين وما توفره الزراعة التقليدية من الاحتياجات الغذائية وأهمية دور الهشاب الاقتصادية والاجتماعية وكيفية زراعة أشجار الهشاب في حيازاتهم المحدودة من الأراضي الزراعية .

كذلك أجريت المقابلات الرسمية وشبه الرسمية والفردية لذات الغرض . كما أخذت تقارير من الجهات ذات الصلة خاصةً إدارة الغابات وأوضحت بجلاء رغبة المزارعين في تبني زراعة الهشاب وما قاموا به من أدوار سابقة في ذلك .

والهدف من هذه التقارير والمقابلات هو تشجيع المشاركة الشعبية
الفعّالة في إعادة إعمار حزام الصمغ العربي بمنطقة الدراسة .