Dedication

To the souls of my parents.

Acknowledgement

All my gratitude and thanks are to almighty Allah who gave me the motives and energy to complete this work.

My sincere appreciation and thanks go to my supervisor Prof. Ahmed Mohammed Baghdadi who has supervised this work. Thanks are also due to Prof. Elltigani Ahmed Abo elgasim for his great help. I am also indebted to all those who encouraged me to perform this work, particularly my colleague Ustaz Mirghani Ahmed Gasmelsid who has helped me a lot to do this work.

Thanks extend to General Administration of Plant Protection, Ministry of Agriculture. Thanks also go to staff of Arab Organization for Agricultural Development, Khartoum.

My sincere thanks are to all friends and colleagues.

List of Contents

Dedication	i
Acknowledgment	ii
List of contents	iii
List of tables	V
English abstract	vi
Chapter one: Introduction	1
Chapter two: Review of literature	4
2.1 Quarantine for Seed	4
2.1.1 International spread of seed – borne diseases due to export and	
import of seed	5
2.1.2 Principles of setting up quarantine regulations	11
2.1.3 Principles of applying quarantine methods	16
2.1.3.1 Pre-entry control	17
2.1.3.1.1 Import from disease-free areas	17
2.1.3.1.2 Field inspection in the exporting country	18
2.1.3.1.3 Laboratory test of seed in exporting countries	18
2.1.3.1.4 Seed treatment	19
2.1.3.2.1 Laboratory testing of seed samples	19
2.1.3.2.2 Field plot inspection	20
2.1.4 Practice in adopting and applying quarantine provisions for	
seed	20
2.1.4.1 Requirements of quarantine control in various countries	20
2.2 Sudan plant quarantine	22
2.2.1 Sudan most important crops	22
2.2.2 Plant quarantine laws and regulations in the Sudan	22
2.2.3 Plant quarantine stations in the Sudan	23
2.2.4 Agricultural imports	23
2.2.5 Law of plant quarantine article (2) in 1939	23
2.2.6 Internal plant quarantine	25

2.2.7 Sudanese Agricultural Exports	25
2.2.8 The current horticultural producing areas	26
2.2.9 The high demand of Sudanese horticultural products	26
2.2.10 The characteristics of horticultural crops	26
2.2.11 The administrative pyramid of the Sudanese plant quarantine	27
2.2.12 Locations of the Sudanese plant quarantine	27
2.2.13 Laws and regulations of plant quarantine	27
2.2.14 Procedures of plant quarantine for export	28
2.2.14.1 Approval of exportation	28
2.2.14.2 Inspection and examination	28
2.2.14.3 Treatments	29
2.2.14.4 The approval (Issue of certificates)	29
2.2.15 Quarantine and non-quarantine pests and diseases	30
2.2.16 Kind and size of the agricultural exports	34
Chapter three: material and methods	38
Chapter four: Results and Discussion	39
4.1 The evaluation of the agricultural quarantine procedures and its	
relation with the flow of the exports	39
4.1.1 The range of speed of procedure application	39
4.1.2 The evaluation of the accuracy of treatments prior to	
exportation	39
4.1.3 The importance of the medical agricultural certificate	41
4.1.4 Costs of agricultural quarantine services	41
References	42
Arabic abstract	vii

List of Tables

Tables Pa	ige no
Table (1): List of quarantine and non – quarantine pests and	
diseases	31
Table (2): The important crops exported through port Sudan sea	
port during the year 2002	36
Table (3): The important crops exported through Khartoum	
airport and Soba containers during the year 2002	37
Table (4): The evaluation of the agricultural quarantine	
procedures	40

Abstract

This study was carried out to investigate the importance of plant quarantine in the Sudan. Reports, records, interviews and samples of certificates concluded that: Plant quarantine is important to protect agricultural products. Plant quarantine control measures reduce infection and combat pests and diseases in the Sudan. Data of this study explains the objectives of plant quarantine. From several plant quarantine points of view there is a particular risk attached to seeds and other plant parts.

Seeds play an important role in transmission of plant diseases. International spread of seed-borne diseases due to export and import of seed may be represented by bacterial canker of tomato, bacterial blight of soybean, black rot of crucifers, bacterial yellow slime disease, bacterial blight of bean, some rust fungi, bunt of wheat, loose smut of wheat, onion smut, downy mildew disease and some viral diseases.

This study includes plant quarantine in the Sudan for all exports and imports of agricultural products.

الملخص

أجريت هذه الدراسة لتحقيق أهمية الحجر الزراعي بالسودان، تضمنت التقارير والمقابلات و نماذج من الشهادات الآتي: الحجر الزراعي مهم لوقاية المنتجات الزراعية، الحجر الزراعي يتحكم في تقليل معدل الإصابات و مخاطر الأفات و الأمراض بالسودان، أظهرت الدراسة أهداف الحجر الزراعي.

مما سبق عن الحجر الزراعي يتضح أن هناك مخاطر جزئية تهدد البذور والأجزاء النباتية الأخرى، تلعب البذور دورا هاما في نقل أمراض النبات، انتشار الأمراض المحمولة بالبذرة دوليا يكون من خلال الاستيراد والتصدير، وتتمثل في الآتي: التقرح البكتيري للطماطم، اللفحة البكتيرية لفول الصويا، العفن الأسود للصليبيات، أمراض الاصفرار اللذج البكتيرية، اللفحة البكتيرية للفول، بعض فطريات الصدأ، تفحم القمح، سويد القمح السائب، سويد البصل، مرض البياض الزغبي، بعض الأمراض الفيروسية.

هذه الدراسة تضمنت الحجر الزراعي بالسودان على صادرات وواردات الإنتاج الزراعي.