

Acknowledgement

I thank Allah for giving me the health and strength which enabled me to complete this study.

I sincerely thank my supervisor Dr. Abdalla Elsheikh Abdelrahman for his professional guidance support and advice throughout the process of this study.

I would also like to thank all the engineers and workers in elgunid sugar factory.

Also my great thank to Sudan university for science and technology.

Last but not least I thank my family and friends for their support and encouragement

Dedication

Always there is a light even when there is a long night So father... let this work shine to you

As you continue doing to me

My mother.....

Who gave me the power

To my teachers

To my friends, for their great support

I dedicate this work with great love to all of them

To my brothers and my sisters and their lovely kids

I dedicate this works with my love

Najsa

ملخص الدراسة

أجريت هذه الدراسة بمشروع سكر الجنيد في الفترة من نوفمبر (2014 إلى ابريل 2015) لتقييم الأداء الحقلي لحاصده قصب السكر من حيث :السعه الحقلية النظرية، السعه الحقلية الفعلية ، الكفاءة ، استهلاك الوقود ، فواقد ما بعد الحصاد ، الأعطال أثناء الحصاد و الإنتاجية.

وتوصلت الدراسة للنتائج التالية: السعه الحقلية النظرية 4.14 فدان/ الساعة، السعه الحقلية الفعلية 3.03 فدان/الساعة ، الكفاءة 73.18% ، استهلاك الوقود السعه الحقلية الفعلية 3.03 فدان/الساعة ، الكفاءة 1.7616% ما بعد الحصاد 1.76169 طن/فدان، الإنتاجية 1.782.72 طن الموسم لمساحة 4.300 فدان للموسم و لم تواجه أي أعطال رئيسيه.

Abstract

This research was conducted in Algnied sugar scheme during the period from (November 2014 to April 2015) the objective of the research was to evaluate the field performance of sugarcane harvester. The criteria which were taken include:

actual and theoretical field capacities, the field efficiency, fuel consumption, losses after harvest, and productivity.

The results obtained were found to be :Actual field capacities 3.03fed/hr, theoretical field capacities 4.14 fed/hr and efficiency 73.18%, fuel consumption 16.86 liter/fed, harvest losses 1.76 ton/fed, productivity 11782.72 tons for an area of 4300 feddan and no major troubles were faced.

INDEX OF CONTENTS

ITEM	PAGE NO.			
الآية	i			
Dedication	ii			
Acknowledgment	iii			
ملخص الدراسة	iv			
Abstract	V			
CHAPTER ONE (INTRODUCTION)				
Sugar cane harvest process	1			
Problem	3			
Objective	4			
CHAPTER TWO (LITERATURE REVIEW)				
Introduction	5			
Sugarcane	11			
Nature of sugar cane and cultivation	11			
Sugar cane cultivation for industry	12			
agricultural mechanization	12			
Testing and evaluation of agricultural machinery	13			
Mechanization of Sugar Cane Farming	14			
Important of Using Sugar Cane Harvester	15			
Manual Harvest Losses Vs Mechanical Losses	17			
Evaluated of Combine Harvesting	18			

CHAPTER THREE (MATERIALS AND METHODS)				
Study Area	21			
Elguneid Sugar Factory	21			
Materials	22			
Methods	28			
Actual Field Capacity	28			
Fuel Consumption	28			
Forward Speed:	29			
Harvester Losses	29			
CHAPTER FOUR (RESULTS AND DISCUSSION)				
Results and Discussion	30			
Chapter Five (Conclusion And Recommendations)				
Conclusion	35			
Recommendations	35			
References	36			

INDEX OF TABLES

Table No	Table Name	Page No
1	Speed of harvester	30
2	actual field capacity	31
3	theoretical field capacity	31
4	the efficiency	32
5	Fuel consumption	32
6	production and tonnage stoppage of harvester in season 2014-2015	33
7	losses after harvesting	34

Appendices		
Appendix One		
1	production of harvester in November 2014	37
2	production of harvester in December 2014	41
3	production of harvester in January 2015	43
4	Production of harvester in February 2015	45
5	production of harvester in March 2015	47
6	production of harvester in April 2015	49
7	production of harvester in season 2014-2015	54
Appendix Two		
8	A diagram Showing the components of field sugar farm	67