

## ACKNOWLEDGEMENT

First and last I thanks Allah for his gracious, merciful and innumerable bounties.

I have been fortunate to work with some one with the professional and academic expertise of my reverend supervisor Prof. Yassin Mohamed Ibrahim , his advice , generous help and comments and his kindness and continuous care is greatly appreciated.

My thanks are also extended to Dr. Mohamed Eltigani Salih for his support and help.

Special thanks are also extended to Prof. Ibrahim Mohamed Abu Alfotouh who supplied me with seed.

I'm also indebted to Mr. Elsadig Elgaali for his advice and cooperation.

Appreciation and respect are due to my old family and small family for their patience, sacrifice, help and encouragement which gave me the motivation to continue.

I would like to express my sincere thanks to the staff members , technicians and labors of the department of Animal Production, Faculty of Agricultural studies, Sudan University of Science and Technology. Also thanks are extended to the Central Veterinary Research Laboratories for their help in Approximate Analysis.

I'm most indebted to all whom in one way or another helped to make this study a success.

## LIST OF TABLES

Table No.		Page
1	The effect of nitrogen fertilization on Plant Height (cultivars Katambora and Callide) during 2006/2007.	20
2	The effect of nitrogen fertilization on Fresh Weight (cultivars Katambora and Callide) during 2006/2007.	22
3	The effect of nitrogen fertilization on Dry Weight (cultivars Katambora and Callide) during 2006/2007.	23
4	The effect of nitrogen fertilization on Plant Height (cultivars Boma and Finecut) during 2006/2007.	26
5	The effect of nitrogen fertilization on Fresh Weight (cultivars Boma and Finecut) during 2006/2007.	28
6	The effect of nitrogen fertilization on Dry Weight (cultivars Boma and Finecut) during 2006/2007.	31
7	The effect of nitrogen fertilization on Crude Protein (CP%) and Crude Fiber (CF%) content (cultivars Katambora and Callide) during 2006/2007.	36
8	The effect of nitrogen fertilization on Ether Extract (EE%) and Ash (%) content (cultivars Katambora and Callide) during 2006/2007.	38
9	The effect of nitrogen fertilization on Nitrogen Free Extract (NFE%) and Metabolizable Energy (ME) content (cultivars Katambora and Callide) during 2006/2007.	39
10	The effect of nitrogen fertilization on Crude Protein (CP%) and Crude Fiber (CF%) content (cultivars Boma and Finecut) during 2006/2007.	45
11	The effect of nitrogen fertilization on Ether Extract (EE%) and Ash (%) content (cultivars Boma and Finecut) during 2006/2007.	47
12	The effect of nitrogen fertilization on Nitrogen Free Extract (NFE%) and Metabolizable Energy (ME) content (cultivars Boma and Finecut) during 2006/2007.	52

## LIST OF FIGURES

Fig. No.		Page
1	The effect of nitrogen fertilization on Plant Height during 2006/2007.	27
2	The effect of nitrogen fertilization on Fresh Weight during 2006/2007.	29
3	The effect of nitrogen fertilization on Dry Weight during 2006/2007.	32
4	The effect of nitrogen fertilization on Crude Protein (CP%) during 2006/2007.	43
5	The effect of nitrogen fertilization on Crude Fiber (CF %) during 2006/2007.	46
6	The effect of nitrogen fertilization on Ether Extract (EE%) during 2006/2007.	48
7	The effect of nitrogen fertilization on Ash (%) during 2006/2007.	49
8	The effect of nitrogen fertilization on Nitrogen Free Extract (NFE%) during 2006/2007.	53
9	The effect of nitrogen fertilization Metabolizable Energy (ME) during 2006/2007.	54

## ABSTRACT

A field experiment was conducted in the Demonstration Farm of the Faculty of Agricultural Studies, Sudan University of Science and Technology, during 2006/2007 season to evaluate the difference doses of nitrogen application on quality and quantity of Rhodes grass (*Chloris gayana* L.) cultivars.

Rhodes grass cultivars sown were Katambora, Callide, Boma and Finecut. Nitrogen (Urea, 46% N) levels used were 0, 40, 60 and 80 kg N/ha.

The treatments were arranged in a split-plot Design with four replications. The cultivars allotted to the main plots and nitrogen levels to the sub-plots. The Quantity parameters measured were plant height, forage fresh and dry weight. Quality attributes investigated were crude protein, crude fiber, ether extract, ash, nitrogen free extract and metabolizable energy.

The results showed that nitrogen levels significantly increased all quantity parameters measured in all cultivars.

Nitrogen application lead to slightly increase in crude protein without significant effect on all cultivars except cultivar Katambora. The results also revealed that crude fiber was not significantly affected by nitrogen application on cultivars Callide and Boma, at that time cultivars Katambora and Finecut were significantly affected.

Ether extract significantly affected by nitrogen application in all cultivars. The results showed that ash was not significantly affected by nitrogen level in all cultivars except cultivar Callide.

Nitrogen free extract was significantly affected by nitrogen level in all cultivars. In addition metabolizable energy was significantly affected by nitrogen application in all cultivars except cultivar Katambora.

The results showed that the best cultivars in the terms of forage Dry Weight , Crude Protein and Nitrogen Free Extract are Finecut , Callide , Katambora and Boma respectively with added fertilizer 80 kg N /ha.

الخلاصة  
ABSTRACT

أجريت تجربة حقلية لموسم (2006/2007 م) بالمزرعة التجريبية لكلية العلوم الزراعية، جامعة السودان للعلوم والتكنولوجيا، لدراسة أثر إضافة النتروجين علي إنتاجية وجودة أصناف علف حشيشة الرودس (*Chloris gayana* L).

زرعت أربعة أصناف من علف حشيشة الرودس هي Boma , Callide, Katambora و Finecut. مستويات النتروجين المستعملة (سماد اليوريا 46% نتروجين) هي 0 , 40 , 60 و 80 كجم نتروجين/هكتار.

تم ترتيب المعاملات علي حسب تصميم القطع المنشقة مع إستخدام أربعة مكررات. الأصناف وزعت كقطع رئيسية ومستويات النتروجين كقطع ثانوية. مواصفات الإنتاجية التي تمت دراستها هي طول النبات , ووزن العلف الرطب والجاف. ومواصفات الجودة هي نسبة البروتين , نسبة الألياف , نسبة الدهون , نسبة الرماد , نسبة المستخلص الخالي من النتروجين ومعامل الهضم.

أشارت النتائج الي أن مستويات النتروجين أدت إلي زيادة معنوية في مواصفات النمو في جميع الأصناف.

أوضحت النتائج أن إضافة النتروجين أدت الي زيادة طفيفة ولكنها لم تؤثر معنوياً علي نسبة البروتين في جميع الاصناف ماعدا الصنف Katambora الذي تأثر معنوياً.

كما أظهرت النتائج أن نسبة الألياف لم تتأثر معنوياً بإضافة النتروجين في الصنفين Boma و Callide بينما تأثرت معنوياً في الصنفين Katambora و Finecut.

نسبة الدهون تأثرت معنوياً بإضافة النتروجين في جميع الأصناف.

كما أشارت النتائج الي أن نسبة الرماد لم تتأثر معنوياً بإضافة النتروجين في جميع الأصناف ماعدا الصنف Callide.

مستويات النتروجين أثرت معنوياً علي نسبة المستخلص الخالي من النتروجين في جميع الأصناف. بالإضافة لذلك معامل الهضم تأثر معنوياً بإضافة النتروجين في جميع الأصناف ماعدا الصنف Katambora.

أوضحت النتائج أن أفضل الأصناف من حيث وزن المادة الجافة , نسبة البروتين و نسبة المستخلص الخالي من النتروجين هو Boma و Finecut , Callide , Katambora علي التوالي مع إضافة 80 كجم نتروجين / هكتار.