

**PRODUCTIVITY OF HYBRID NAPIER CO3 AND CO4
WITH THE APPLICATION OF DIFFERENT KIND OF
FERTILIZERS UNDER THE CONDITIONS IN EUSL
LIVESTOCK FARM**



L.K.G. DINUKE ANURADHE LAKSHAN



FAG566



Project Report
Library - EUSL

**DEPARTMENT OF ANIMAL SCIENCE
FACULTY OF AGRICULTURE
EASTERN UNIVERSITY, SRI LANKA**

2018

PROCESSED
Main Library, EUSL

ABSTRACT

Feeding standards of ruminant livestock could be significantly enhanced through the cultivation of improved quality forages which are suitable for different agroclimatic conditions of the country. Hybrid Napier cultivars CO3 and CO4 are the most popular among ruminant rearing farmers. Hence, an experiment was carried out to assess the growth parameters, herbage yield and chemical composition of hybrid Napier CO3 and CO4 (*Pennisetum perpureum* X *Pennisetum americanum*) at the Livestock farm of Department of Animal Science, Faculty of Agriculture, Eastern University Sri Lanka.

The experiment was conducted during the period of July to September 2018 with four different fertilizers namely 100% inorganic fertilizer, 100% organic fertilizer, control and 1:1 mixture of inorganic and organic fertilizer with CO3 and CO4 with four blocks under factorial randomized complete block design. Growth parameters were measured at two-week intervals from 4th week up to the 8th week.

The variables measured were plant height, leaf length, number of tillers per clump, leaf area, yield and total ash content. Collected data were subjected to Analysis of Variance (ANOVA). The means were separated using Duncan's multiple range test at 0.05 significance level.

Results obtained indicated that productivity of CO3 is superior to CO4 in terms of growth under the conditions in Eastern University Livestock farm, and resulted the highest ($p < 0.05$) fresh matter yield of 18.07 tons per hectare, with a dry matter yield of 3.83 tons per hectare with 100% inorganic fertilizer. The results also revealed that similar yield was obtained in CO3 with the 1:1 mixture of inorganic and organic fertilizer.

In terms of chemical composition, CO3 showed the highest total ash content (18.44%) on dry matter basis. The results revealed that CO3 performed better than CO4 in terms of growth, yield and nutrient composition under the conditions at Eastern University Sri Lanka. According to the results of the study farmers can save half of the cost for inorganic fertilizer by using farmyard manure along with half of the recommended dose of inorganic fertilizer for fodder cultivation.

TABLE OF CONTENTS

Page No.

ABSTRACT	I
ACKNOWLEDGEMENT	III
TABLE OF CONTENTS	V
LIST OF TABLES	VII
LIST OF FIGURES	VIII
CHAPTER 01	VIII
1. INTRODUCTION	1
CHAPTER 02	5
2. LITERATURE REVIEW	5
2.1. Crop Husbandry	6
2.1.1. Growth characters and fodder production behavior	6
2.1.2. Cutting interval	7
2.1.3. Inter cropping with fodder grass	8
2.1.4. Effect of nutrients on forage growth	8
2.1.5. Fertilizers	9
2.1.6. Planting material and the productivity	10
2.2. Cultivars of Hybrid Napier	11
2.3. Spacing	14
2.4. Nutritive value and quality	17
CHAPTER 03	24
3. MATERIALS AND METHODS	24
3.1. General details	24
3.1.1. Experimental site	24
3.1.2. Weather	24
3.1.3. Field operations	26
3.2. Experimental details	27
3.3. Data collection	28
3.3.1. Biometric observations	29
3.3.2 Growth Analysis	29

3.3.3. Fodder production potential	30
3.3.4. Nutritive value and quality	30
3.4. Data analysis	30
CHAPTER 04	31
4. RESULTS AND DISCUSSION	31
4.1. Plant height.....	31
4.2. Leaf length.....	33
4.3. Number of tillers per clump	35
4.4. Leaf Area Index.....	38
4.5. Green fodder production	39
4.6. Dry matter content and Dry matter yield	41
4.7. Total ash	43
CHAPTER 05	46
5. CONCLUSION	46
REFERENCES	47
ANNEXURE I	
ANNEXURE II	