



In situ Rumen Degradation of Fresh and Ensiled Guinea Grass (*Megathyrsus maximus* Jacq.) Cultivars Harvested at 30 and 45 Days

Angelo Francis F. Atole^{12*}, Jade Dhapnee Z. Compendio², Oscar B. Posas², Lijueraj J. Cuadra², Manuel D. Gacutan, Jr. ²
Central Bicol State University of Agriculture¹, San Jose, Pili, Camarines Sur, Philippines 4418
Visayas State University², Visca, Baybay City, Leyte, Philippines 6521

Corresponding author: angeloofrancisc.atole@cbsua.edu.ph*



INTRODUCTION

This study evaluated the in situ degradation of fresh and ensiled Local Guinea grass (LG) and Mombasa grass (MG) harvested at 30 and 45 days cutting intervals (CI) under the microclimate of Visayas State University, Baybay City, Leyte, Philippines.

MATERIALS AND METHODS

1. Experimental Treatments

- FLG-Fresh Local Guinea Grass
- FMG-Fresh Mombasa Grass
- LG30-LG, harvested and ensiled at 30 days
- LG45-LG, harvested and ensiled at 45 days
- MG30-MG, harvested and ensiled at 30 days
- MG45-MG, harvested and ensiled at 45 days

2. Experimental Design and Analysis

- Randomized Complete Block Design (3 heifers)
- Tukey Honestly Significance Difference Test ($p < 0.05$)
- SAS Program (Ver. 9)

3. Rumen Incubation of Samples



4. Data Gathered

a. In situ ruminal degradation

$$\text{Degradation (\%)} = \frac{[(W1 \times N1) - (W0 \times N1) - (W2 \times N2)]}{[(W1 \times N1) - (W0 \times N1)]}$$

where:

- W1=the DM weight of the sample before incubation time
- N1=the % proximate analysis of feed before incubation (DM basis)
- W0=the DM weight lost after washing of the control sample
- W2=the DM weight of the sample after the incubation time
- N2=the % proximate analysis of the feed after incubation (DM basis)

b. Effective degradability (ED)

where:

$$\text{ED (\%/h)} = \frac{a + (b \times c)}{(c + k)}$$

a= is the rapidly soluble fraction (%)
b= is the potentially degradable fraction (%)
c= is the constant rate of degradation of b (%/h)
k= is the rumen outflow rate (%/h)

CONCLUSION

These findings indicate that MG30 has superior *in situ* degradability characteristics, making it a promising forage option for ruminant diets.

ACKNOWLEDGMENT



RESULTS AND DISCUSSION

Table 1. *In situ* dry matter degradation (DMD) of fresh and ensiled Guinea grass cultivars harvested at 30 and 45 days

Treatments	DMD (%)			
	0-h	24-h	48-h	72-h
FLG	4.10	27.37	36.82 ^b	46.03 ^d
FMG	4.45	26.85	44.15 ^{ab}	54.78 ^{ab}
LG30	3.12	33.55	43.80 ^{ab}	53.56 ^{abc}
LG45	1.90	29.65	40.86 ^b	50.09 ^c
MG30	2.20	32.76	48.17 ^a	56.03 ^a
MG45	3.41	32.12	39.02 ^b	51.67 ^{bc}
P=	0.1168	0.3051	0.0022	<0.0001

*Treatments with similar superscripts in each column are not significantly different

Table 2. *In situ* neutral detergent fiber degradation (NDFD) of fresh and ensiled Guinea grass cultivars harvested at 30 and 45 days

Treatments	NDFD (%)			
	0-h	24-h	48-h	72-h
FLG	3.38	20.15 ^c	25.64 ^d	34.88 ^c
FMG	3.74	25.90 ^b	32.80 ^c	35.66 ^c
LG30	4.07	28.00 ^{ab}	38.69 ^{ab}	42.64 ^b
LG45	4.01	24.74 ^{bc}	33.23 ^{bc}	38.64 ^{bc}
MG30	3.84	29.45 ^a	43.96 ^a	45.99 ^a
MG45	3.33	26.57 ^{ab}	37.60 ^{bc}	41.66 ^b
P=	0.8495	0.0007	<.0001	<.0001

*Treatments with similar superscripts in each column are not significantly different

Table 3. *In situ* acid detergent fiber degradation (ADFD) of fresh and ensiled Guinea grass cultivars harvested at 30 and 45 days

Treatments	ADFD (%)			
	0-h	24-h	48-h	72-h
FLG	3.13	15.11	24.42 ^{ab}	31.85 ^{bc}
FMG	4.09	9.79	20.11 ^b	28.90 ^c
LG30	5.47	16.34	29.98 ^{ab}	41.00 ^{ab}
LG45	3.58	14.04	24.03 ^{ab}	35.71 ^{abc}
MG30	5.32	18.54	32.61 ^a	43.55 ^a
MG45	4.87	15.19	20.97 ^b	37.40 ^{abc}
P=	0.0667	0.2580	0.0093	0.0033

*Treatments with similar superscripts in each column are not significantly different

