

CHANGING FORAGE MANAGEMENT

By HOANG HUY

Better forages

Panicum maximum



Australian Mix



Brach. Mulato



Brachiaria mutica

In cooler winter months only!



Avena sativa



Maize

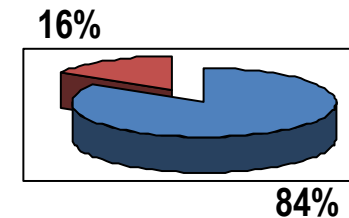
Productivity & quality of some grass species

Grass species	N° of harvest	Fresh Prod (ton/ha)	Rank	Dry matter (%)	Crude protein (%)
Elephant	7	250	2	16%	7%
VA06	7	300	1	16%	7,5%
Guinea TD58	9	150	4	22%	12%
Mulato 2	9	200	3	19%	13%
AM (under irrigation system)	10	250	2	17%	13,5%

How to evaluate the nutritive value of feed?

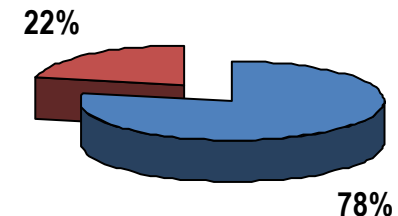
- **Dry Matter (DM):**

- Elephant DM= 16% → 1 kg grass : 0.16kg DM
- Guinea DM = 22% → 1 kg grass : 0.22kg DM



- **Crude Protein (CP)**

- Elephant CP=7% → 1kg DM: 0.07 kg (70g) CP
- Guinea CP=12% → 1kg DM: 0.12 kg (120g) CP



- **Comparison:**

- 1 kg Elephant → 0.16 kg DM → $0.16 \times 0.07 = 0.0112$ kg (11.2g) CP
- 1 kg Guinea → 0.22 kg DM → $0.22 \times 0.12 = 0.0264$ kg (26.4g) CP

Comparison: 11.2 g CP (Elephant) # 26.4g CP (Guinea)

Leaf-to-stem ratio

Grass species	N° of harvest	Fresh Prod (ton/ha)	Rank	Dry matter (%)	Crude protein (%)	Leaf-to-stem ratio	Useful (%)
Elephant grass	7	250	2	16%	7%	70/30	60%
VA06	7	300	1	16%	7,5%	75/25	60%
Guinea TD58	9	150	4	22%	12%	20/80	95%
Mulato 2	9	200	3	19%	13%	15/85	95%
AM (under irrigation system)	10	250	2	17%	13,5%	25/75	95%

Dry matter, Protein & Feed Intake

Grass species	Productivity (ton/ha)		
	Fresh Prod (ton/ha)	Dry matter	Protein
Elephant	250	40	2.8
VA06	300	48	3.6
Guinea TD58	150	33	3.96
Mulato 2	200	38	4.9
AM	250	42.5	5.7

Dry matter, Protein & Forage Intake

Grass species	Productivity (ton/ha)			Edible DM (ton/ha)	Rank	Inedible (ton/ha)
	Fresh Prod (ton/ha)	DM	Pr			
Elephant	250	40	2.8	24	5	16
VA06	300	48	3.6	28.8	4	19.2
Guinea TD58	150	33	3.96	31.5	3	1.5
Mulato 2	200	38	4.9	36.1	2	1.9
AM	250	42.5	5.7	40.4	1	2.4

Nutritive values of forage in milk production

Forage	Nutritive values				CP left to produce milk (kg)	Amount of produced milk (kg)
	Fresh weight (kg)	DM (kg)	CP (kg)	Maintenance		
Elephant	40	6.4	0.45	0.391	0.059	0.72
VA06	40	6.4	0.54	0.391	0.149	1.82
Guinea	40	8.8	1.06	0.391	0.669	8.16
Mulato	40	7.6	0.99	0.391	0.599	7.30
AM	40	6.8	0.92	0.391	0.529	6.45

Values based on CP

Production data of AM

- Data on 57 farms with AM under irrigation

Harvest	Prod (kg/m ²)			
	Av	St Dev	Min	Max
1°	1.9	1.2	0.3	8.4
2°	2.6	0.9	0.9	4.4
3°	2.8	0.6	1.2	3.6
4°	3.4	0.6	2.4	4.7
5°	3.5	0.6	2.6	4.7
Total	2.6	1.1	0.3	8.4
Total (2°-5°)	3.0 kg/m²	0.8	0.9	4.7

How many cows can you feed on 1000m²?

3 kg/m² x 10 harvests

= 30.000 Kg Fresh

= **82 Kg fresh grass /day**

2.2 - 3.8 kg/m²

= 60 – 104 kg/day

= **enough for 1.5 to 2 cows**



**33 to 57 ton
DM/hectare/year**

Irrigation system is too expensive?



• $1000 \text{ m}^2 = 450 \text{ euro}$  price 1 cow = 1000 euro

• How much extra milk per day to pay back the investment ?

450 euro = price of 1500 kg of milk (0.3 euro/kg milk)

$1000 \text{ m}^2 =$ feed for 1.5 cows

Return in 1 year = $1500/1.5/305 = 3.3 \text{ kg milk/day/cow}$

Return in 2 year = $1500/1.5/610 = 1.6 \text{ kg milk/day/cow}$

Return in 3 year = $1500/1.5/915 = 1.1 \text{ kg milk/day/cow}$