NUTRIENTS DIGESTIBILITY BY SHEEP FED PALM KERNEL CAKE (Elaeis guineensis) FROM BIODIESEL PRODUCTION

Borja M.S., Oliveira R.L.., Nunes. A.S., Bagaldo. A.R., Garcez Neto A.F., Barbosa A.P., *Macome F.M*

World Congress on Oils and Fats
& 28th ISF Congress
27 - 30 September 2009 • Sydney Australia

RONALDO LOPES OLIVEIRA

DEPARTMENT OF ANIMAL PRODUCTION . FEDERAL UNIVERSITY OF BAHIA (UFBA). SALVADOR. BAHIA. BRAZIL

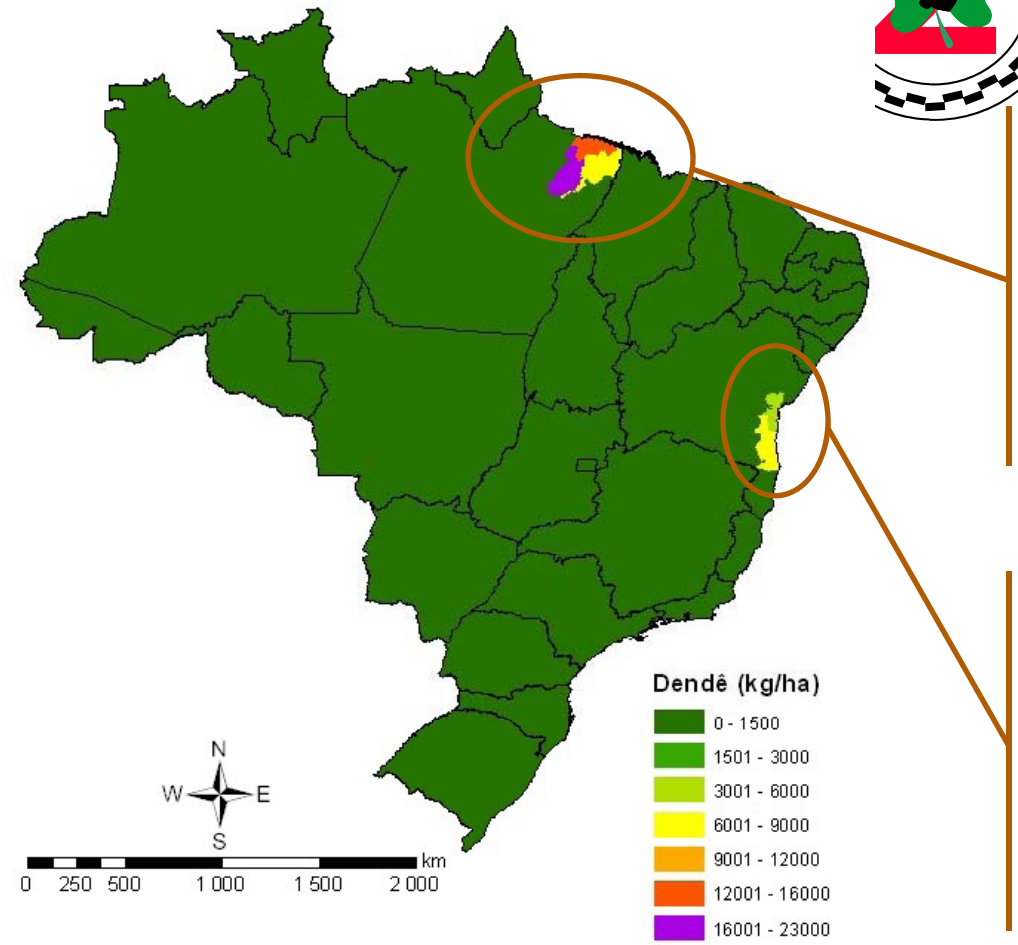
fapesb
Fundação de Amparo à Pesquisa do Estado da Bahia

CNPq
Conselho Nacional de Desenvolvimento Científico e Tecnológico

Introduction

- Biodiesel
- Palm Kernel

Introduction



Fonte dos dados: IBGE (Produção Agrícola Municipal - 2004)

- 20 million ha
- Potencial for expansion

- Dende coast (Bahia)
- 47 thousand ha
- Produtcivity - 600 kg/ha
- 4,000 kg oil/ha

Objective

To determine diet digestibility of finishing lambs supplemented with palm kernel .

Materials and methods

- Veterinary Medicine School
- Federal University of Bahia
- From June to September 2007

- Exp. lasted 70 days

Materials and methods

Table 1. Proportion of ingredients in the diets.

Ingredients	Levels of palm kernel in the concentrate (%DM)			
	0.00	6.50	13.00	19.50
Corn	37.38	32.36	27.16	21.78
Soybean meal	11.12	9.84	8.52	7.15
Palm kernel	0.00	6.30	12.82	19.57
Premix	1.50	1.50	1.50	1.50
Tifton	50.00	50.00	50.00	50.00

Materials and methods

Table 2. Chemical composition of dietary ingredients.

Composition (%DM)	Ingredients			
	Corn	Soybean meal	Palm kernel	Hay of (Tifton 85)
Dry matter	88.68	89.73	95.29	93.37
Ash	1.03	6.43	3.33	6.66
Crude protein	4.53	46.52	16.64	8.28
Ether extract	3.01	2.61	7.78	0.62
Neutral detergent fiber	12.12	11.28	70.04	83.65
Acid detergent fiber	3.70	7.70	45.71	45.32
Lignin	1.06	5.00	15.72	13.15
Cellulose	2.64	2.70	29.99	32.17
Hemicellulose	8.43	3.58	24.33	38.33
Non-fiber carbohydrate	79.29	23.18	2.20	0.78

Materials and methods

Table 3. Chemical composition of experimental diets.

Nutrients	Palm kernel (%DM)			
	0.00	6.50	13.00	19.50
Dry matter	91.34	91.70	92.12	92.56
Ash	11.00	11.23	11.46	11.70
Crude protein	1.72	2.03	2.34	2.67
Ether extract	47.60	51.26	55.05	58.97
Neutral detergent fiber	24.89	27.49	30.18	32.96
Acid detergent fiber	35.22	30.96	26.54	21.97
Lignin	7.52	8.40	9.30	10.23
Cellulose	17.37	19.09	20.87	22.72
Hemicellulose	4.23	4.17	4.25	4.34
Non-fiber carbohydrates	27.58	25.29	21.50	17.58
TDN	69.4	73.4	70.1	74.8

Materials and methods

- 20 Santa Ines lambs
- 6 months of age
- 22 kg of BW

- Individual pens
- Space allowance - 1.0m^2
- Individual water bowl and a feeding barrier

Materials and methods

- The roughage/concentrate ratio was 50:50
- 10 to 20% of feed orts
- Tifton-85 (*Cynodon* sp.) hay

- Feed samples were collected in the 44th .45th and 46th day
- Samples were collected from feed, orts, and feces

Materials and methods

- The experimental diets were distributed in a completely randomized design with four treatments and five replicates . A regression analysis was performed to compare treatment means.

Results

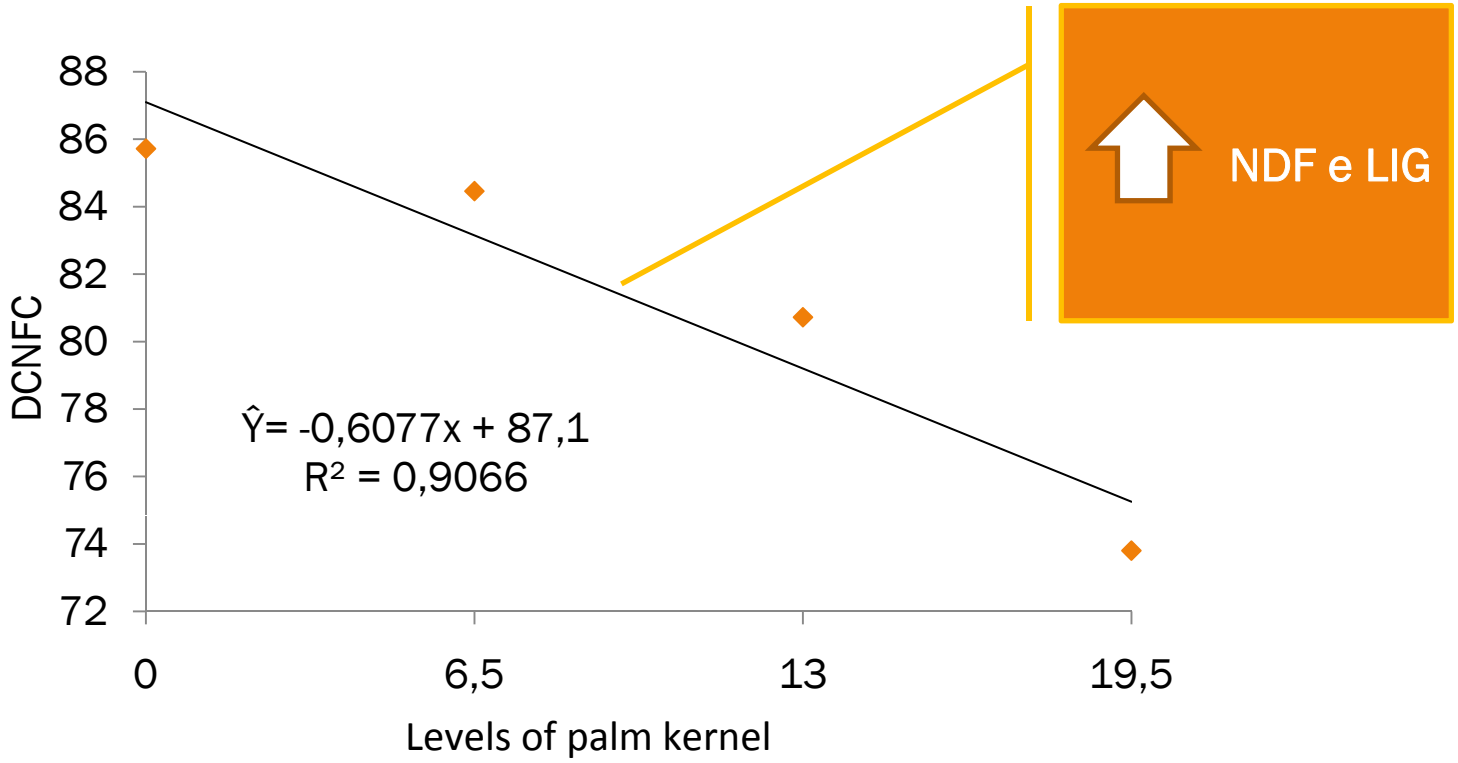
NDF e LIG

Table 4. Digestibility coefficients (DC) of nutrients from lambs fed different levels of palm kernel

Digestibility coefficients	Levels of palm kernel (%DM)				VC (%)	Regression equation	R^2
	0.0	6.5	13.0	19.5			
DM	75.38	75.18	75.88	72.68	5.17	$\hat{Y}$ =74.80	-
OM	77.11	76.98	79.13	72.70	6.35	$\hat{Y}$ =75.74	-
CP	69.36	67.78	67.22	67.87	7.02	$\hat{Y}$ =68.10	-
NDF	67.24	69.18	73.40	71.30	6.90	$\hat{Y}$ =70.28	-
ADF	65.52	72.50	74.02	70.16	7.55	$\hat{Y}$ =71.10	-
NFC	85.72	84.46	80.72	73.80	7.13	$\hat{Y}$ =87.10-0.60*X	0.91
EE	79.90	80.34	84.89	84.96	6.83	$\hat{Y}$ =82.50	-

Results

Fig. Relationship between digestibility coefficient of NFC and levels of palm kernel



Conclusions

Palm kernel can be used up to 21% of DM to feed growing sheep without decreasing nutrients digestibility.