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Session S.05 - 24 August 2009
Abstract nº 4831

Growth performance and carcass characteristics of Holstein bulls reared exclusively on grass or finished with ground maize

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Portugal
Madeira
Canary Islands
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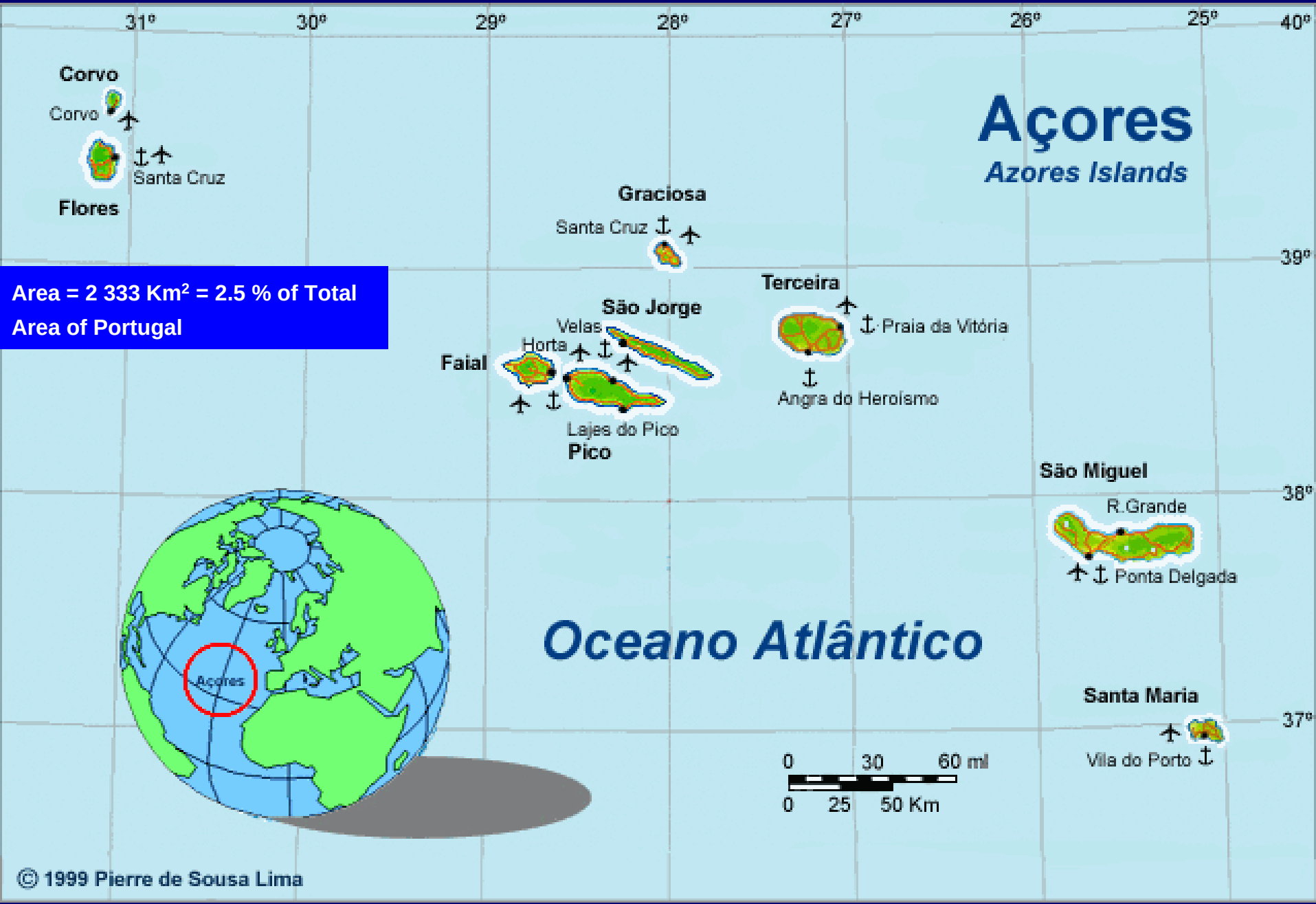
31º
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Açores
Azores Islands
Corvo
Corvo
Flores
Santa Cruz
Graciosa
Santa Cruz
São Jorge
Velas
Horta
Faial
Pico
Lajes do Pico
Terceira
Praia da Vitória
Angra do Heroísmo
São Miguel
R.Grande
Ponta Delgada
Santa Maria
Vila do Porto
Area = 2 333 Km² = 2.5 % of Total
Area of Portugal
Oceano Atlântico
Açores
0 30 60 mi
0 25 50 Km
© 1999 Pierre de Sousa Lima

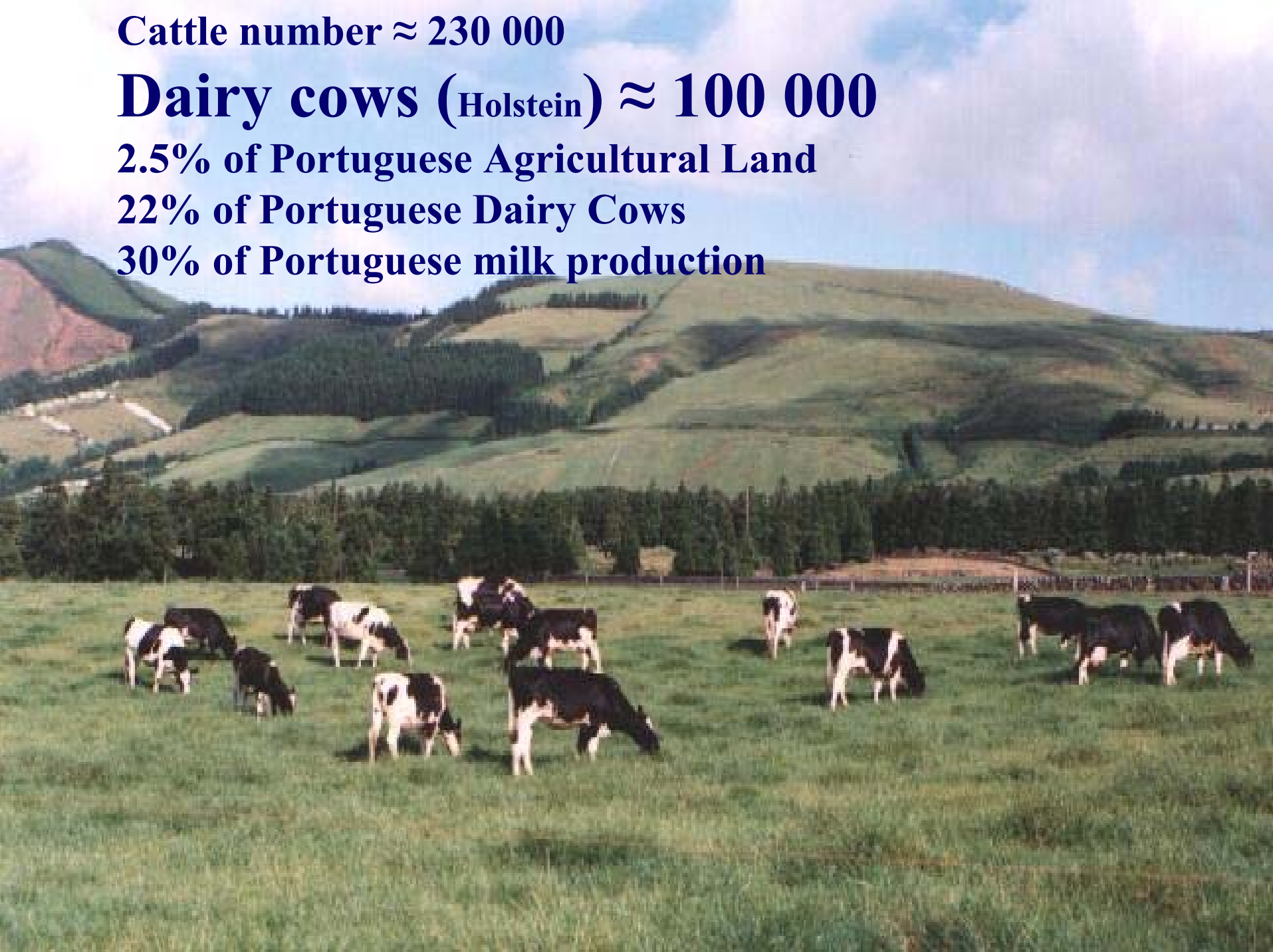
Temperate Atlantic climate

Annual mean Temperature=17.7ºC (Max 26ºC – Min 12.5ºC)

Annual mean Air Humidity = 80%

Annual mean Rainfall = 1 300 mm, well distributed around the year

Pasture ≈ 90% of Agricultural Land Use


Cattle number ≈ 230 000
Dairy cows (Holstein) ≈ 100 000
2.5% of Portuguese Agricultural Land
22% of Portuguese Dairy Cows
30% of Portuguese milk production

≈ 40.000 Holstein males/year

for **beef production**

Bulls In **“all year round grass grazing”**

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Session 08 - 26 August 2007 - Abstract nº 0988

Session 08 Theatre 5

Carcass quality and fatty acid composition of intramuscular fat of Holstein bulls reared exclusively on pasture or in feedlot

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TRADITIONAL SYSTEM

→ 31 Holstein bulls

vs

INTENSIVE SYSTEM **(50% concentrate)**

→ 20 Holstein bulls

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Results

INDICATORS RELATED TO HUMAN HEALTH

	Traditional system		Feed-lot
CLA	0.59% ± 0.03	**+80%**	0.33% ± 0.03
Racio n-6/n-3	1.5 ±0.13	**- 5 x**	7.9 ±0.57
EPA	0.79% ± 0.09	**+125%**	0.35% ± 0.08
DHA	0.32% ± 0.03	**+33%**	0.24% ± 0.09
DPA	0.95% ± 0.08	**+144%**	0.39% ± 0.08
Racio P:S	0.22		0.22 (Not Sign.)

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Results

CARCASSES

	Traditional system	Feed-lot	P
1	60%	35%	< 0.05
P	13%	0%	< 0.05

(SEUROP)

CONCLUSIONS

- Beef produced exclusively from grass had healthier intramuscular fat

However

- Carcasses were very lean and had a very bad conformation

CHALLENGE

Find ways of obtaining fatter carcasses with better conformation without deteriorating the favourable fat associated with grass

OPTIONS:

- Increasing the age at slaughter
- Castration
- Impose a fattening period (grass is supplemented with a high energy feed)

OBJECTIVES

1. Find ways of obtaining better carcasses (fatter with better conformation) without deteriorating the healthy fatty acids associated with grass.

2. Measure the extent to which the high level of linoleic (18:2*n*-6) and low level of α-linolenic (18:3*n*-3) acids of concentrates, provided during a short finishing period, affects the fatty acid profile of intramuscular fat of cattle previously fed exclusively on grass.

3. Provide information concerning growth performance, carcass characteristics and fat quality of Holstein bulls fed exclusively on grass pasture.

11 Bulls

P (Pasture only)

11 Bulls

P4 (Pasture + 4kg maize/head day $^{-1}$)

11 Bulls

P8 (Pastagem + 8kg maize/head day $^{-1}$)

Finishing = (21d adaptation) **85 DAYS**

START	**SLAUGHTER**
Age = 15.4 ± 1.9 (Months)	**19.1** ± 1.9
LW = 387 ± 51 (kg)	P = 527 ± 18.5 P_4 = 544 ± 15.5 P_8 = 566 ± 16.6

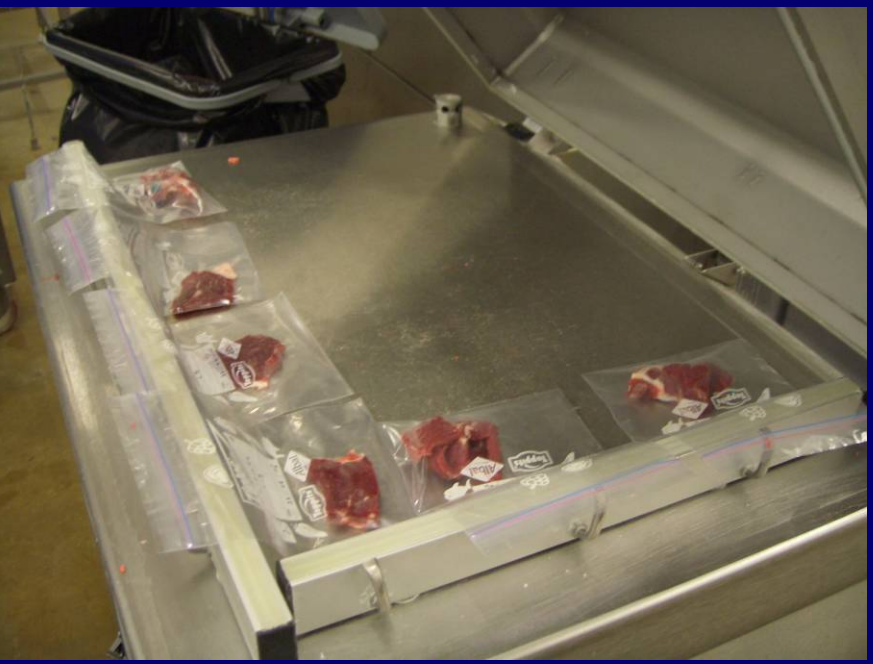
METHODS

- Groups rotate at random in ≠s paddocks
- Stocking rate = 1.8 Head/ha
- 21d weighings

- Slaughter and carcass trimming


OBRIGATORIO
A LAVAGEM
DAS MÃOS


99986
3m



Longissimus dorsi (10th – 11th rib)

PARÂMETERS EVALUATED:

1 – Productive performance

ADG
Carcass weight
Dressing percentage

2 – Carcass Quality

Classification (SEUROP)
Thickness
Subcutaneous fat depth
Area of longissimus dorsi
Saleable meat

3 – Beef quality:

Amount and composition of intramuscular fat

Results

PRODUTIVE PARAMETERS

PARAMETERS	P	P4	P8	*P*
ADG (Kg)	1.228^{a} ±0.05	1.441^{b} ±0.05 (+17 %)	1.667^{c} ±0.05 (+36 %)	< 0.001
Carcass weight (Kg)	244^{a} ±10.5	258^{ab} ±8.7	279^{b} ±9.3 (+35 kg)	< 0.05
Dressing percentage (%)	46^{a} ±0.45	47^{a} ±0.44	49^{b} ±0.44 (+6.5%)	< 0.001

Results

CARCASS QUALITY	P	P4	P8	*P*
Fat cover (*mm*)	0.75^{a} ±0.2	2.9^{b} ±0.4	2.7^{b} ±0.5	<0.01
Thickness (*kg/cm*)	1.82^{a} ±0.06	1.90^{a} ±0.06	2.05^{b} ±0.06	<0.05
Area of LD (mm^2/*kg carcass*)	37.6 ±1.6	35.4 ±1.4	35.0 ±1.2	N.S
Saleable meat (%)	69.9 ±0.42	69.1 ±0.53	69.9 ±0.42	N.S
Extra joints/carcass weight (%) (sirloin + fore rib)	9.1 ±0.13	8.5 ±0.12	9.1 ±0.08	N.S

Results

(SEUROP) CARCASS CLASSIFICATION

CLASSIFICATION	P	P4	P8	*P*
FAT				*<0.05*
1	63%	10%	0%	
2	38%	90%	100%	
CONFORMATION				*<0.05*
P	75%	60%	18%	
O	25%	40%	82%	

CONCLUSIONS

1. **SUPPLEMENTATION OF GRASS WITH GROUND MAIZE FOR 85 d SIGNIFFICANTELY INCREASED:**

   - **The growth rate of bulls and the weight and dressing percentage of carcasses**
   - **<u>The quality of carcasses</u> : thickness, fat cover and conformation**

2. **CARCASS CONFORMATION DID NOT RESPOND WELL TO SUPPLEMENTATION** ***(60% and 18% of carcasses still were graded as P)***

3. **The supplementation of grass with ground maize deteriorated the FA profile of intramuscular fat of bulls???**

Carne dos Açores

Indicação Geográfica Protegida
Legislação - D/SRAP/1/2000 A