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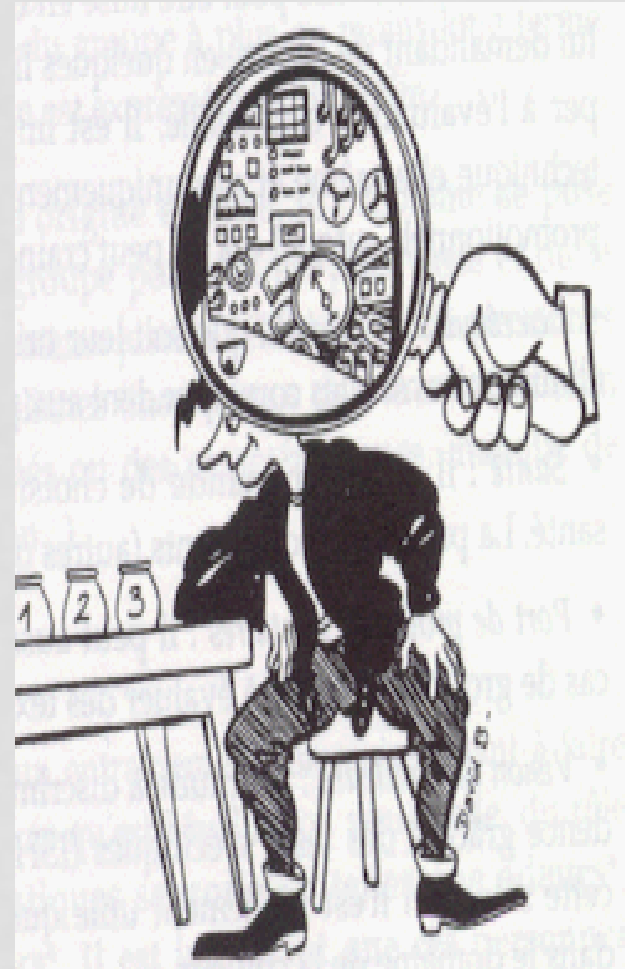
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EFFECTS OF CASTRATION AGE, PROTEIN LEVEL AND LYS/MET ON PERFORMANCE AND CARCASS QUALITY OF STEERS

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- In the current market situation, differentiating products can be a good strategy to maintain sale's rate



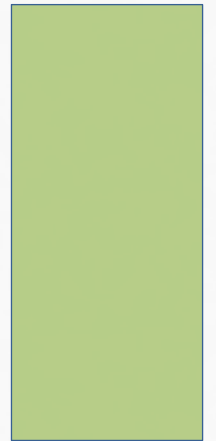
- In the current market situation, differentiating products can be a good strategy to maintain sale's rate
- **Castration:**
 - Improves carcass and meat quality
 - Reduces aggressiveness
 - Complex procedure
 - Worst feed conversion
 - Welfare implications. EU: no immunocastration; physical with anaesthesia and analgesia

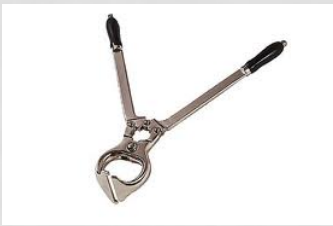




- 70 % of farming cost relates to the feeding
- Environmental implications of excess of Nitrogen excretion

MATERIAL AND METHODS





64 Friesian calves

Burdizzo instrument

Local anaesthesia

Analgesia

Non-steroidal antiinflammatory

2 x 2 x 2

**CASTRATION
AGE**

**Early
15 days**

**Late
5 months**



64 Friesian calves

2 x 2 x 2

CASTRATION
AGE

Early
15 days

Late
5 months

PROTEIN LEVEL

Low
13 %

High
15 %

LYS/MET

Low
3.0

High
3.4

DIET COMPOSITION (% DM)

Crude protein	13 %		15 %	
Lys/Met	3.0	3.4	3.0	3.4
Barley grain	42.0	42.0	36.1	36.1
Corn grain	35.0	35.0	35.0	35.0
Soybean meal 44%	4.7	5.0	10.7	11.0
Palm calcium soap	1.6	1.5	1.6	1.5
Smartamine® M	0.24	-	0.22	-

DIET COMPOSITION (NRC, 1996)

Crude protein	13 %		15 %	
Lys/Met	3.0	3.4	3.0	3.4
Crude protein	13.0	13.0	15.0	15.0
Crude fat	5.1	5.0	5.1	5.0
ME Mcal/kg	2799	2787	2799	2786
Lysine	6.08	6.10	6.08	6.11
Methionine	2.03	1.81	2.03	1.79

- 90 days old: distribution into pens (92.9 ± 0,6 kg)
- Slaughter: 443.6 ± 26.2 kg (10.5 - 13.0 mo)

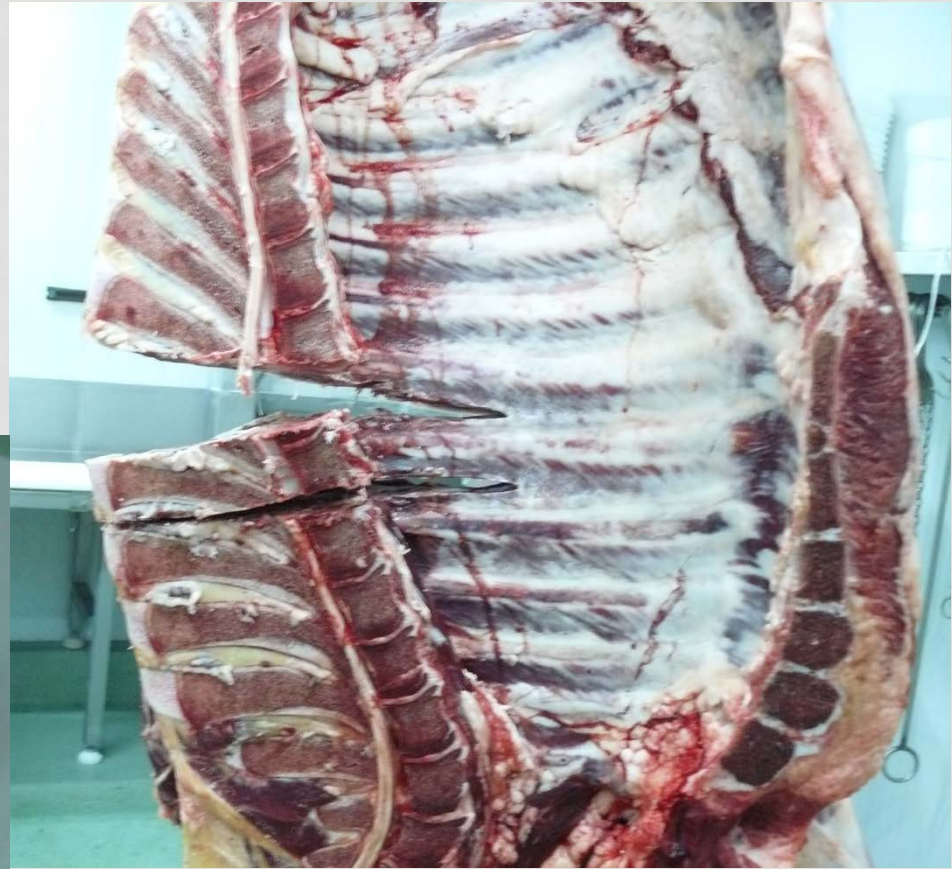


- Cold carcass weight
- Carcass dressing
- Carcass length
- Carcass conformation
- Fatness score



- Tissue composition

- Muscle %
- Fat %
- Bone %
- Waste %



- Statistical analysis

ANOVA

$$Y_{ijk} = \mu + C_i + P_j + R_k + C_i * P_j + C_i * R_k + P_j * R_k + C_i * R_j * L_k + e_{ijk}$$

C - Castration

P - Protein level

R - Lys/Met



RESULTS

PRODUCTION

	Castration		Protein level		Lys/Met	
	Early	Late	13%	15%	3.0	3.4
Initial weight <i>kg</i>	93.6 ns	92.2	92.7 ns	93.1	92.8 ns	93.0
Final weight <i>kg</i>	444.9 ns	442.3	444.0 ns	443.1	443.6 ns	443.5
ADG <i>kg 90-final</i>	1.30 ns	1.37	1.36 ns	1.31	1.35 ns	1.33
ADG <i>kg 215-final</i>	1.29 t	1.45	1.42 ns	1.32	1.38 ns	1.34
ADG <i>kg 30-90</i>	0.72 **	0.69				

CARCASS QUALITY

	Castration		Protein level		Lys/Met		
	Early	Late	13%	15%	3.0	3.4	
CCW <i>kg</i>	231.6	ns 230.0	230.2	ns 231.2	229.0	ns 232.4	
Carcass dressing %	52.1	ns 52.0	51.8	ns 52.2	51.6	ns 52.4	
Carcass length <i>cm</i>	127.4	ns 127.5	127.5	ns 127.4	126.7	ns 128.1	
Conform.	4.47	ns 4.53	4.34	ns 4.66	4.50	ns 4.50	O-/O
Fatness	5.14	ns 5.06	5.11	ns 5.08	5.07	ns 5.10	2

TISSUE COMPOSITION

	Castration		Protein level		Lys/Met	
	Early	Late	13%	15%	3.0	3.4
Muscle %	56.3	ns 56.7	55.6	* 57.4	55.8	*** 57.2
SC fat %	4.5	ns 4.5	4.8	ns 4.4	4.6	ns 4.6
IM fat %	17.9	ns 17.1	17.4	ns 17.6	17.9	ns 17.1
Total fat %	22.4	ns 21.8	22.2	ns 22.0	22.5	ns 21.7
Bone %	16.8	ns 16.8	17.7	* 15.8	17.0	ns 16.6
Others %	4.5	ns 4.7	4.5	ns 4.8	4.7	ns 4.6

CONCLUSIONS

- There are no differences between **castration** at 15 days old or at 5 mo in production or carcass characteristics
- Using diets with **higher protein level** (15%) and **higher Lys/Met** ratio (3.4) by reducing methionine, are suggested to obtain carcasses with higher muscle content
- The price of the feed and the potential return must be taken into consideration for such diets to be profitable

THANK YOU

