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Effect of dietary net energy content on performance and lipid deposition in immunocastrated pigs

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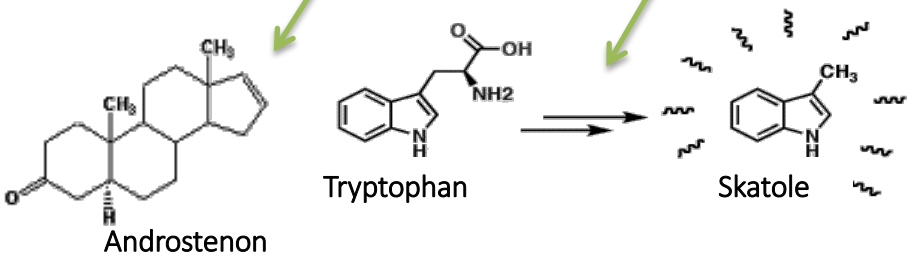
Introduction

Why CASTRATION ?

to avoid **boar taint** of pork from some entire males[1]

caused by ANDROSTENON and SKATOLE[2]



Androstenon — Tryptophan — Skatole

Pheromone

Surgical castration without anaesthesia/analgesia questioned from welfare point of view[1]

ALTERNATIVES:

- anaesthesia/analgesia
- raising only females
- rearing entire males
- **immunocastration**

active vaccination with peptide analogue of GnRH
→ obtain castration-like effect

After second vaccination[3]:

- increase in feed intake
- faster growth
- reduced feed efficiency
- **increase in fat content of the carcass**

quantitative or qualitative feed restriction

[1] Bonneau M. 1998. Meat Sci., 49: 257–272.
[2] Patterson RLS 1968. J. Sci. of Food Agr., 19, 31-38.; Vold E 1970. Maldinger fra Norges Landbrukshøgskole 49, 1-25.
[3] Millet et al. 2011. Animal 5, 1119-1123.; Batorek et al. 2012. Animal 6, 1-9.

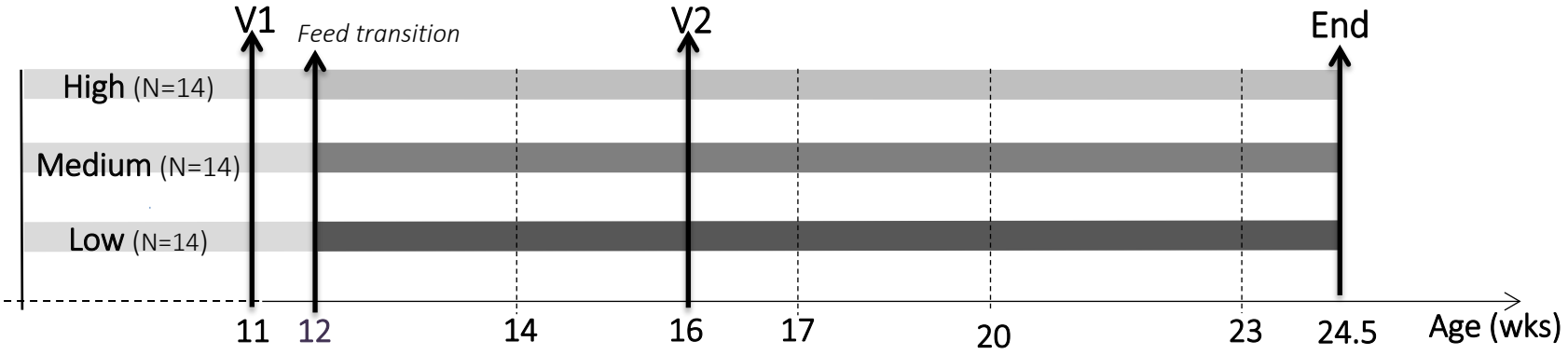
Materials and methods 1

AIM - to evaluate the effects of decreasing dietary net energy in immunocastrated pigs slaughtered 8 weeks after V2 on growth performance, carcass composition and meat quality.

FEEDING - *ad libitum* with wheat-, corn- and barley- based diets, differing in NE content; (reduced by addition of wheat bran , soybean hulls and dried beet pulp)

Dietary net energy value:
- → HIGH: 11.6 MJ/kg DM
- → MEDIUM: 11.1 MJ/kg DM
- → LOW: 10.5 MJ/kg DM

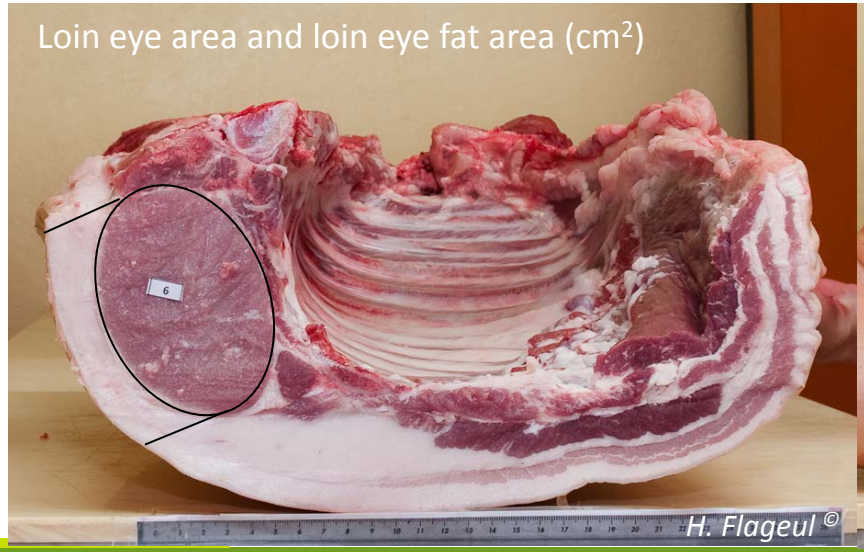
Experimental design



Materials and methods 2

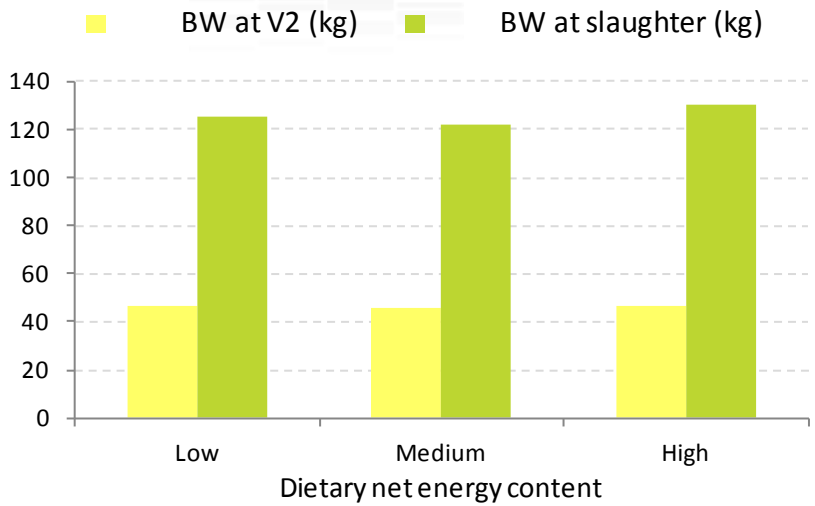
Measurements and calculations

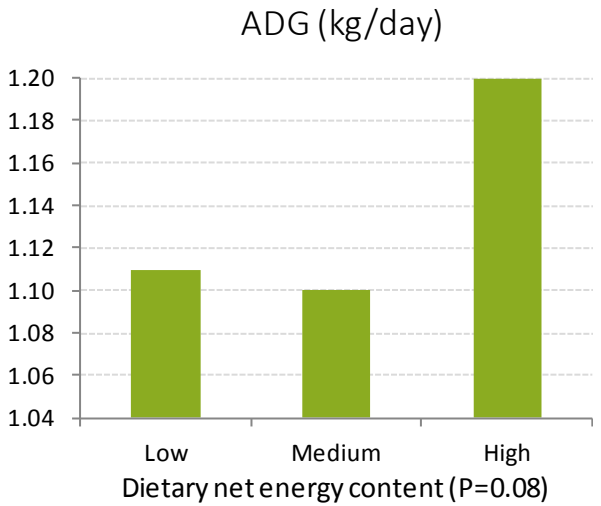
- individual daily feed intake after V2
- BW, ADG, G:F, G:NE intake
- P2 backfat thickness at V2 and the day before slaughter → **BFT gain**
- carcass and meat quality (fat depots)[1]

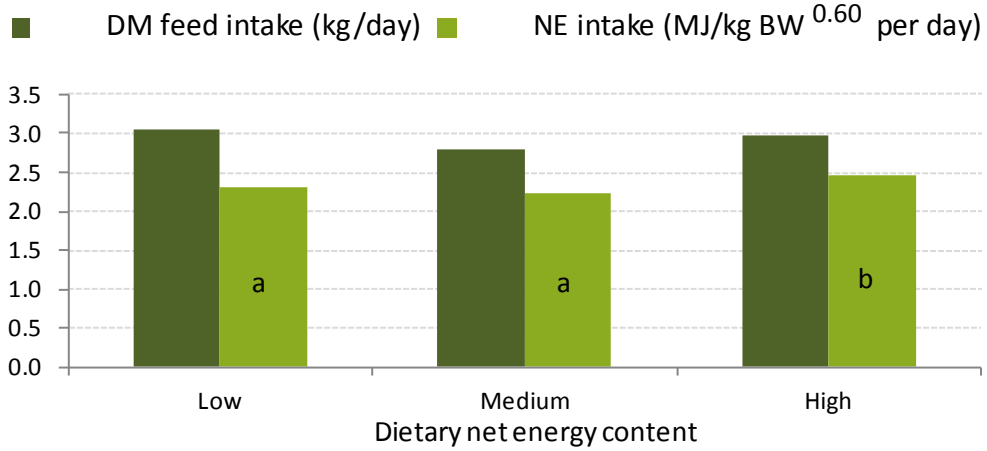


[1] as described in Batorek et al. 2012. J.Anim. Sci. 90, 4593-4603.

Results – performance 1







* $P < 0.05$

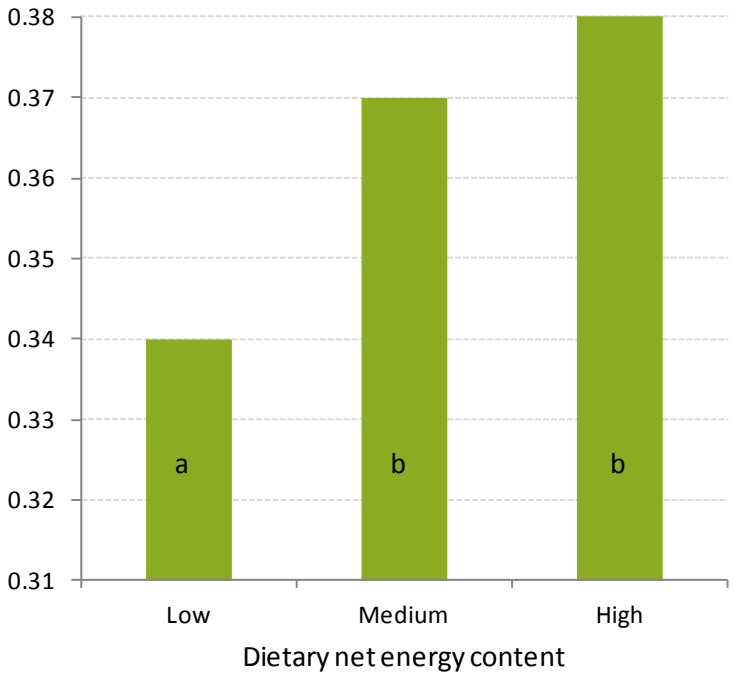
[a-b] Least squares means within a graph with different superscripts differ ($P < 0.05$)

Zeng *et al.* 2002. Livest. Prod. Sci. 77, 1-11.

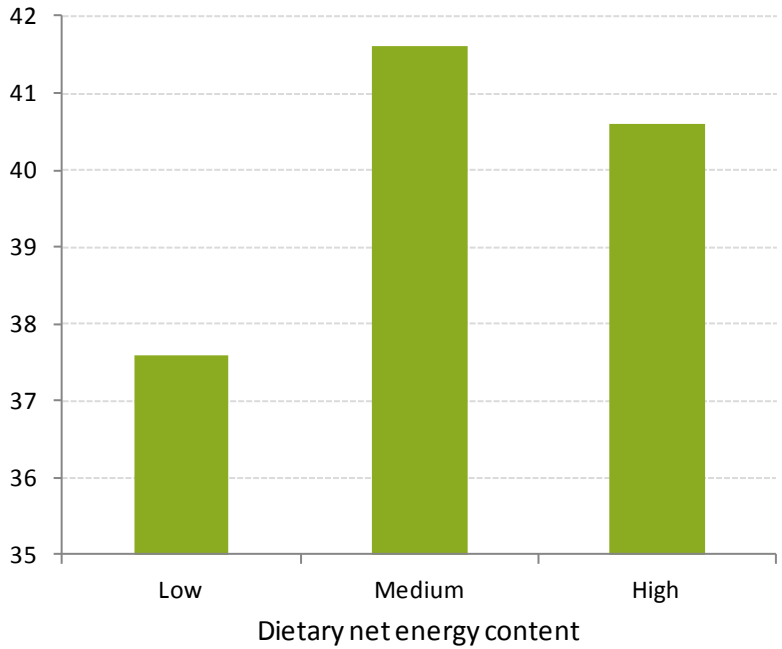
→ ADFI was unaffected by approximately 6% reduction in dietary NE and the same trend was observed for ADG.

Results – performance 2

Gain : Feed ratio (g/g)**



Gain : NE intake ratio (g/MJ NE)



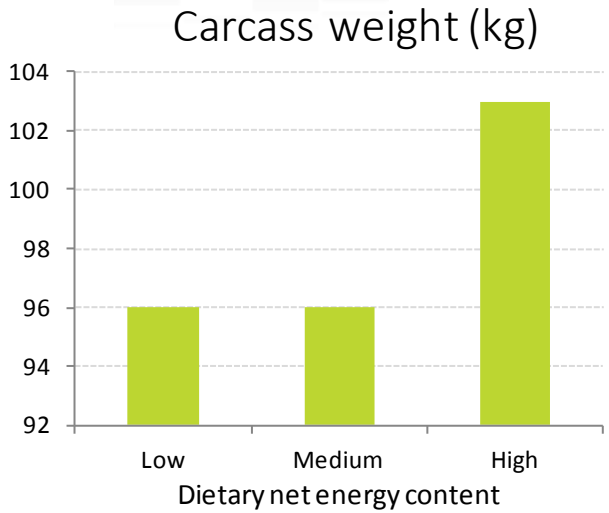
**P < 0.01

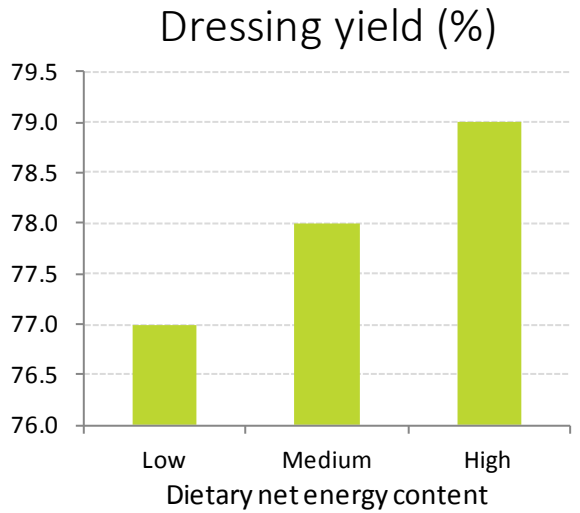
[a-b] Least squares means within a graph with different superscripts differ (P < 0.05)

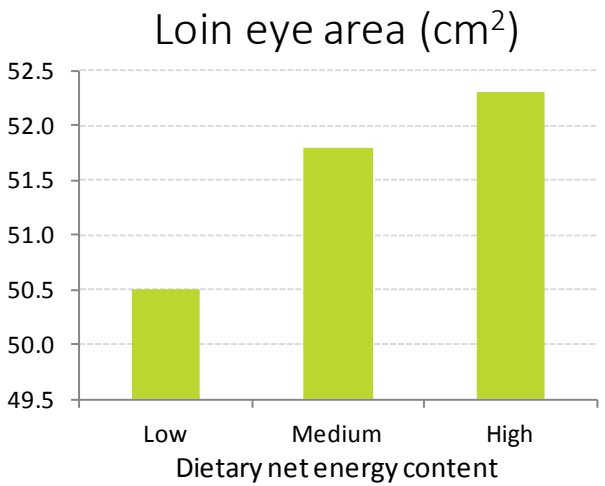
Quiniou *et al.,* 2012. Animal 6, 1420-1426.

→ restriction in IM to a level of 78 and 85% of *ad libitum* feed intake; ADG was reduced (for 20 and 12% respectively), but G:F was not improved.

Results – carcass quality



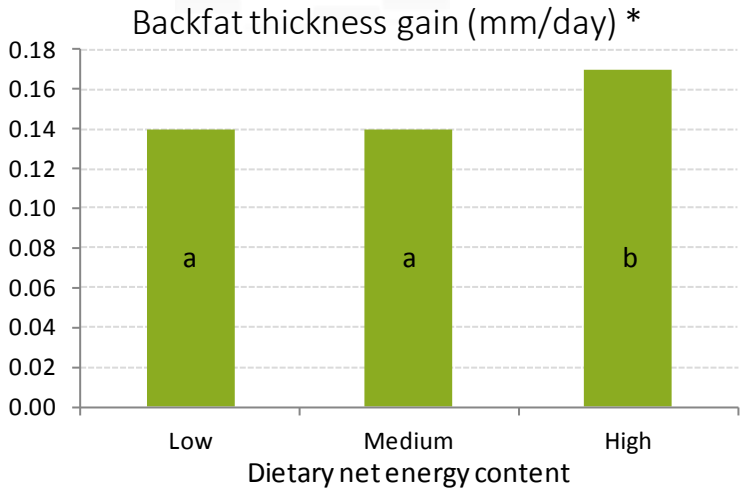


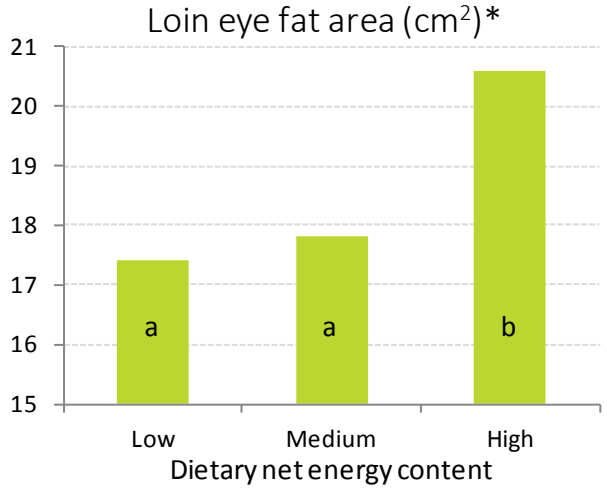


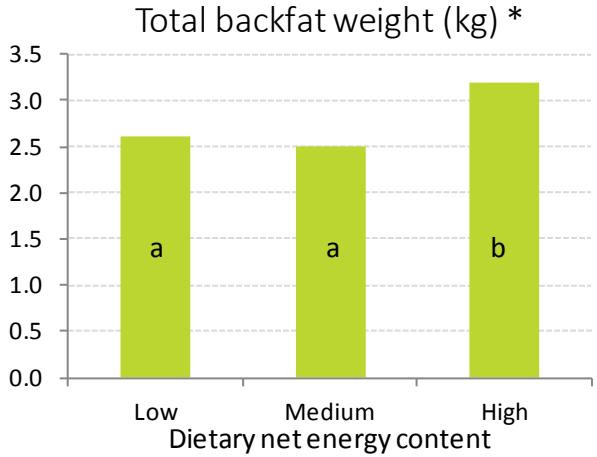
Quiniou and Noblet, 2012. J. Anim. Sci. 90, 4362-4372.

→ similar NE reduction in barrows did not change carcass weight or dressing yield.

Results – fat depots 1



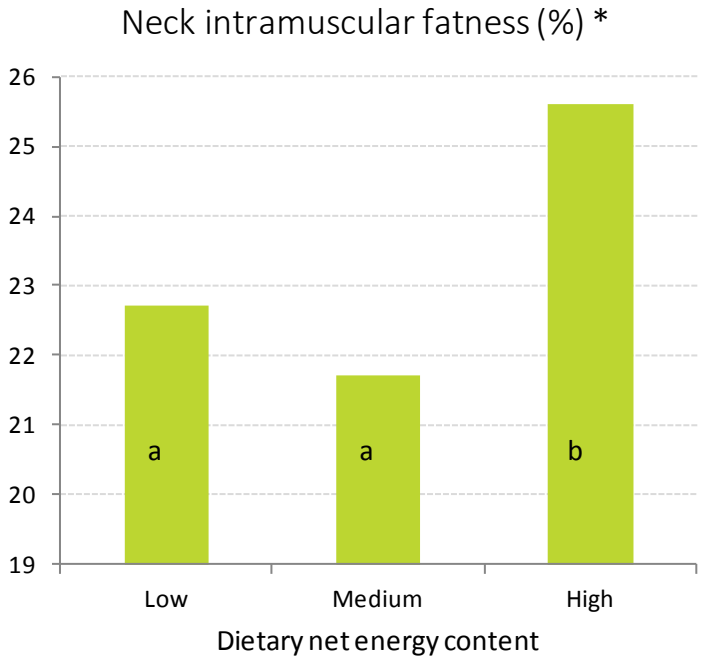


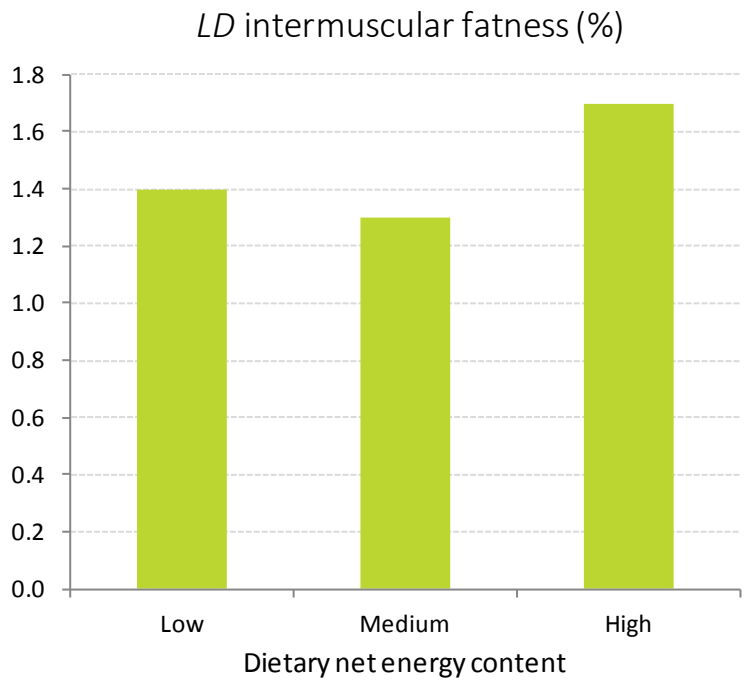


* $P < 0.05$

[a-b] Least squares means within a graph with different superscripts differ ($P < 0.05$)

Results – fat depots 2





* $P < 0.05$

[a-b] Least squares means within a graph with different superscripts differ ($P < 0.05$)

Batorek *et al.* 2012. J.Anim. Sci. 90, 4593-4603.

→ quantitative feed restriction in IM pigs to 80% of *ad libitum* feed intake of SC pigs; only reduction of leaf fat, no effect on BFT, loin fat area, NIMF or IMF was observed.

Conclusions

4 and 9 % reduction in dietary NE content*

- did not significantly influence performance
  (tendency for lower ADG)
- limited subcutaneous and inter-muscular fat deposition
- had no effect on intramuscular fat content in LD muscle

- when time between V2 and slaughter is prolonged in immunocastrated pigs, the NE restriction may be beneficial in order to avoid excessive carcass fatness

* with dilution of energy by addition of coarse materials

When time between V2 and slaughter is prolonged in immunocastrated pigs, the NE restriction may be beneficial in order to avoid excessive carcass fatness.

Thank you for your attention.

Hvala za pozornost.

H. Flageul ©