Session 55
Market oriented pig production

Effect of dietary presentation on growth performance of entire male pigs and boar taint risk

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Introduction – Processing and nutritive value of pig diets

Chemical analyses or Tables ➔ least cost formulation of diets

production cost / feed quality

grinding, mixing = Mash

T°, Pressure

steam

pelleting = Pellets

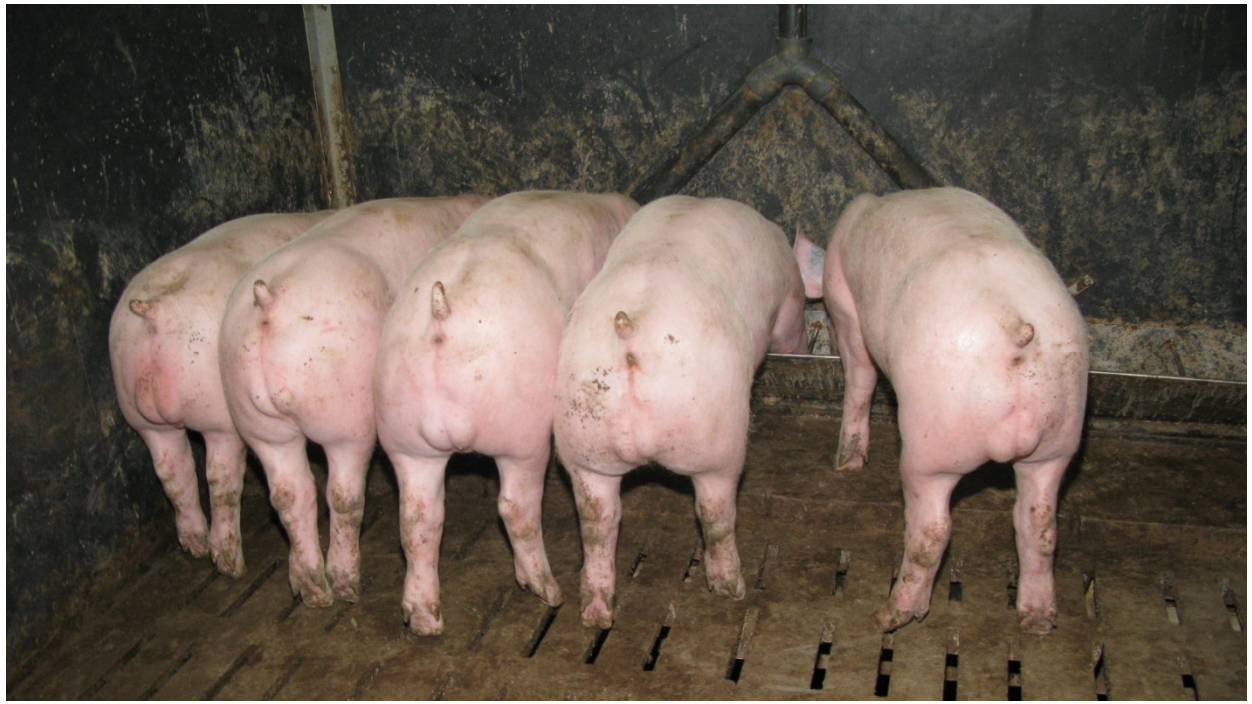
From gilts and barrows (literature)

↘ feed conversion ratio (FCR)
↗ nutritional values of the diet
(amino acid, energy digestility, …)

From entire male pigs?

Material and methods – pigs and management

- 5 entire males /pen x 8 pens / treatment
- Restricted feed allowance : +25 g/d, max 2.6 kg/d/pig
- Liquid feeding
- BW range: 22-109 kg



Material and methods - diets

Chemical characteristics of feedstuffs
(from the feed manufacturer)

Nutritional characteristics of feedstuffs
(www.evapig.com)

Formulation / nutritional constraints

"Mash values"	Growing (< 65 kg)	Finishing
Net energy (NE), MJ/kg	9.64	
Crude protein, g/kg	159	152
Digestible lysine, g/MJ NE	0.95	0.85

MASH → GROUND PELLETS

Industrial process

Material and methods – measurements

- Measurements
  - Growth performance
  - Carcass characteristics
  - Boar taint risk components in pure liquid fat (HPLC)

    minimum detectable concentration for skatole (MDC): 30 ng/g

- Statistical analyses
  - SAS v9.2
  - Experimental unit: the pen

Growth performance / results

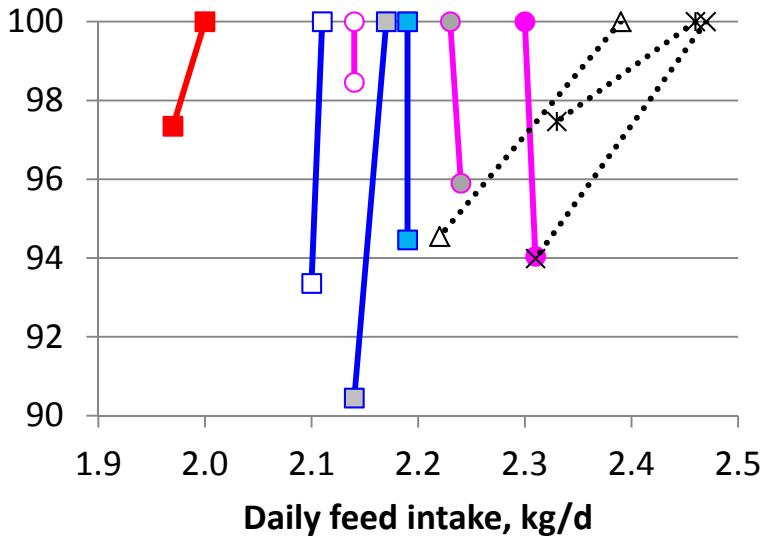
GROWTH	MASH	PELLETS	P-value
Daily feed intake, kg	1.98	1.95	0.06
Daily gain, g	882	882	0.99
FCR	2.26	2.20	0.05

-2.7%

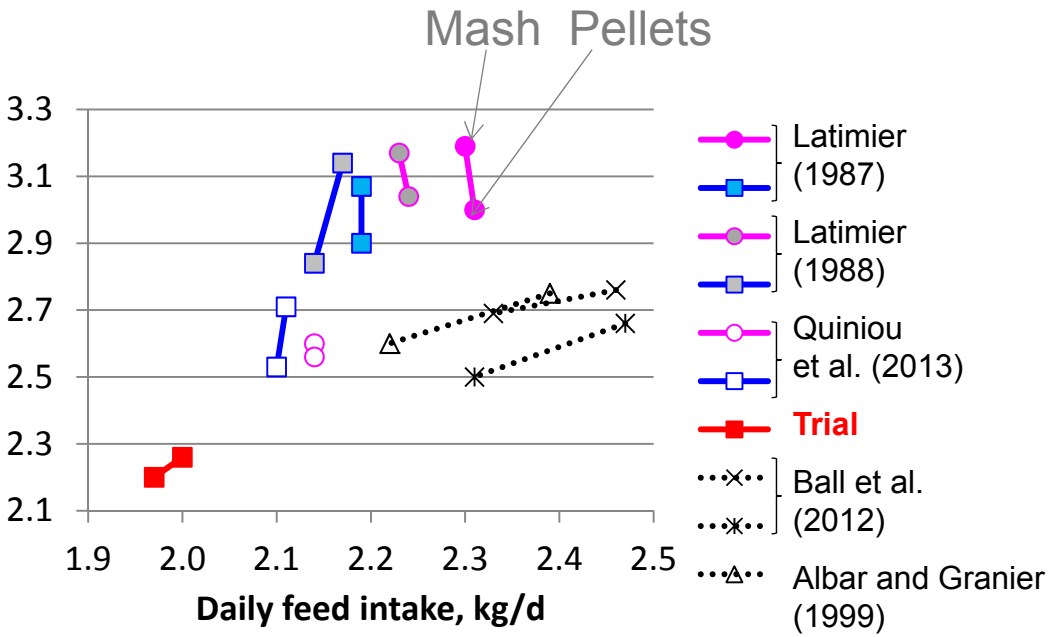
Feed conversion ratio / results + literature

Relative FCR

(base 100 = mash)



Mean FCR

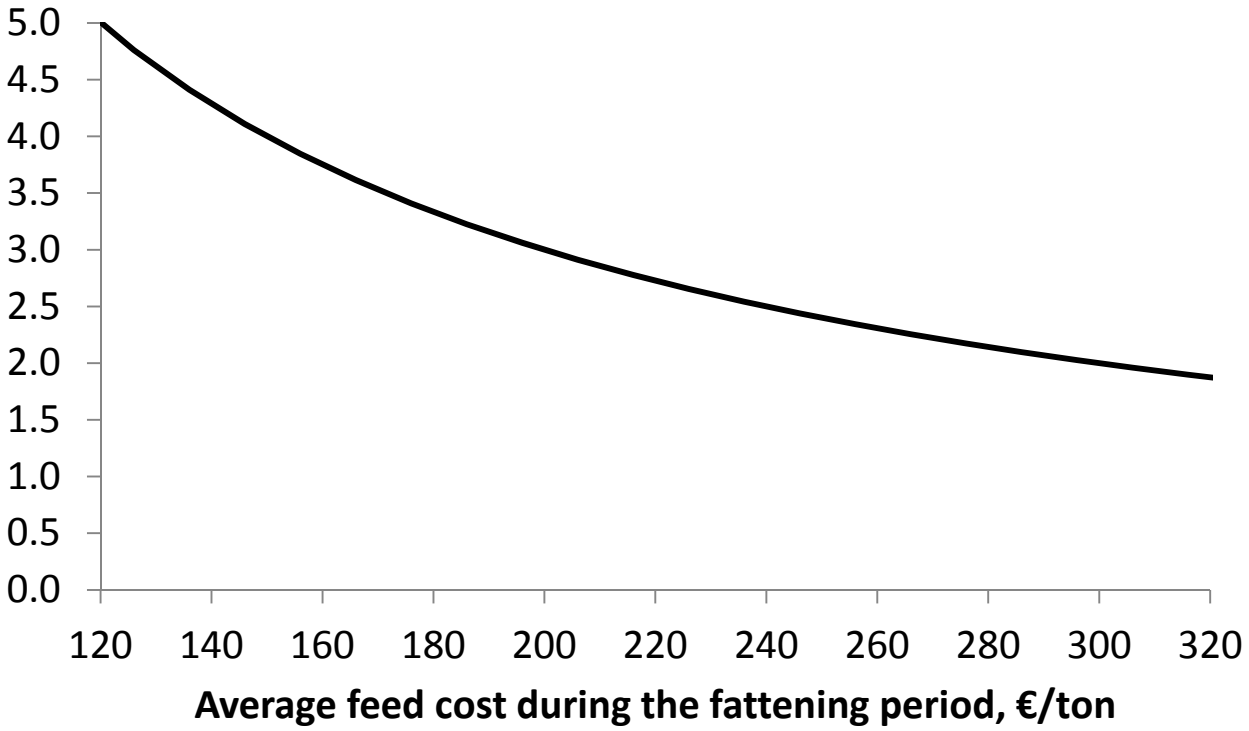


gilts – barrows – entire male – mixed genders

Quiniou et al.

Feed conversion ratio / economy

FCR minimal improvement, % ⇨ required to compensate for the cost of pelleting (6 €/ton)



Feed conversion ratio / economy

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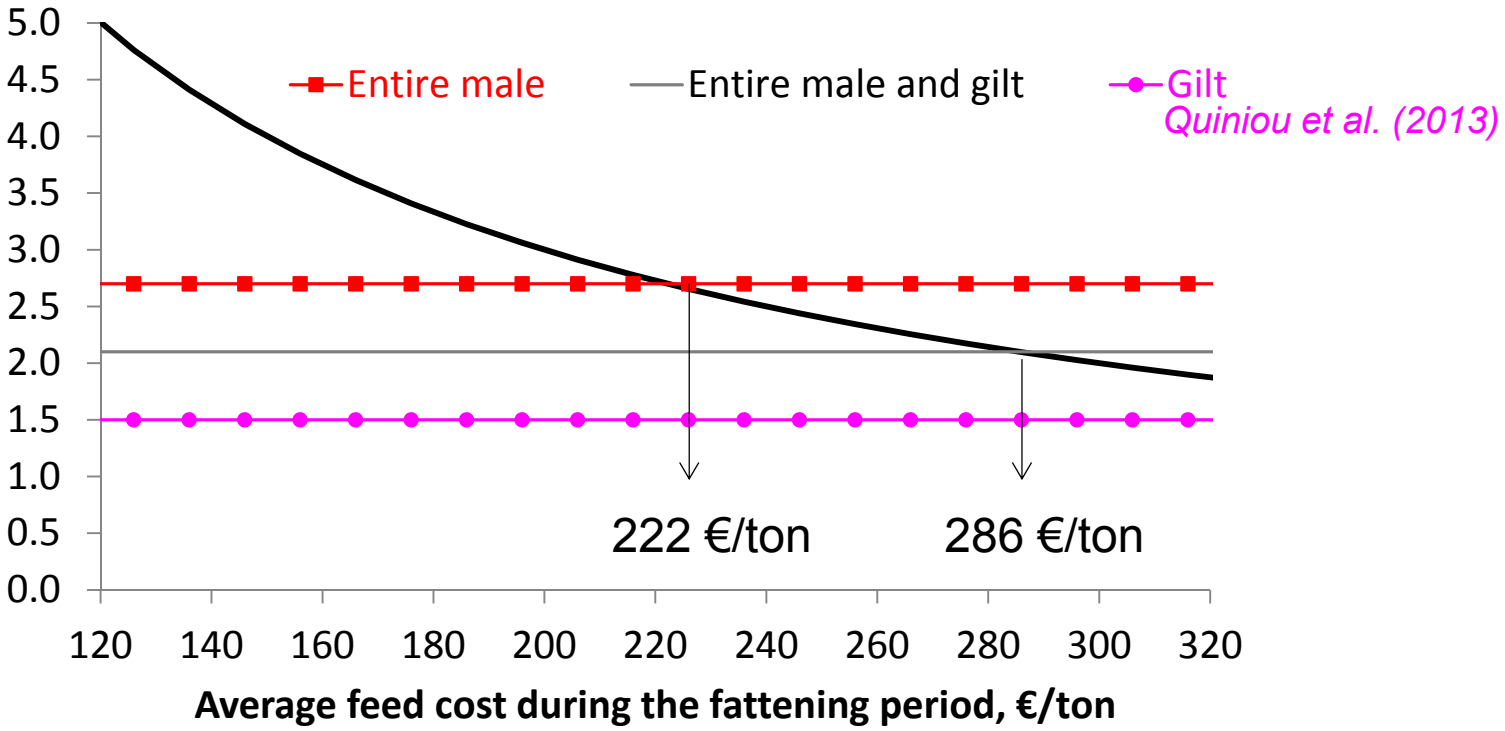
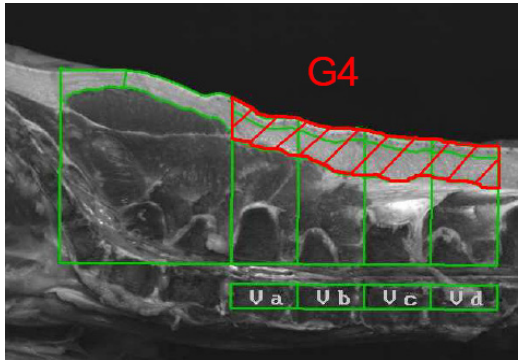
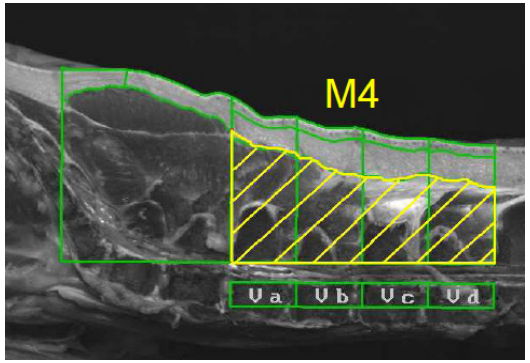


Carcass characteristics / results

CARCASS	MASH	PELLETS	P-value
Warm carcass, kg	83.4	84.1	0.55
Carcass yield, %	76.5	77.3	0.14
Fat thickness G4, mm	20.3	20.8	0.33
Muscle thickness M4, mm	52.6	53.3	0.02





Skatole concentration in fat / results

SKATOLE	MASH	PELLETS	P-value
All samples			
Skatole, µg/g	0.092	0.053	0.01
No < 0.1 µg/g, %	27	32	0.21 (χ^2)

Skatole concentration in fat / results

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All samples			
Skatole, μg/g	0.092	0.053	0.01
No < 0.1 μg/g, %	27	32	0.21 (χ^2)
Samples > MDC			
No, %	35	28	0.01 (χ^2)
Skatole, μg/g	0.094	0.064	0.07

Skatole concentration in fat / results

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No < 0.1 μg/g, %	27	32	0.21 (χ^2)
Samples > MDC			
No, %	35	28	0.01 (χ^2)
Skatole, μg/g	0.094	0.064	0.07
Skatole ___, %	61	51	0.01
Skatole + Indole			
Correlation, r S - S/S+I	78	77	

Conclusion

- Obtained differences are in agreement with an improved digestibility of nutrients in pellets
  - Amino acids
    - ↘ skatole concentration in fat / reduced amount of indigestible tryptophan
    - ↗ muscle thickness / ↗ protein deposition
  - Amino acids + energy
    - ↘ FCR in entire male pigs
- Diets prepared in a commercial feed plant
  - On-field technology
  - Rapid transfer of results in commercial farms
  - Pellets = interesting when average feed price is high

Perspectives

- There are studies running to increase
  the knowledge on the effect of technology applied to feed
  on the nutritional values of ingredients

  ➔ toward low cost formulation
  adapted to dietary presentation
  adapted to the type of process (T, die characteristics...)

Thank you for your attention

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