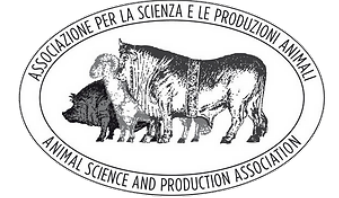




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INFLUENCE OF A WAXY CORN DIET AND SEX ON GROWTH PERFORMANCE, CARCASS CHARACTERISTICS, AND MEAT QUALITY OF HEAVY PIGS

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PLAS TEAM

Pisa Livestock farming, Animal food quality, and Sustainability



INTRODUCTION



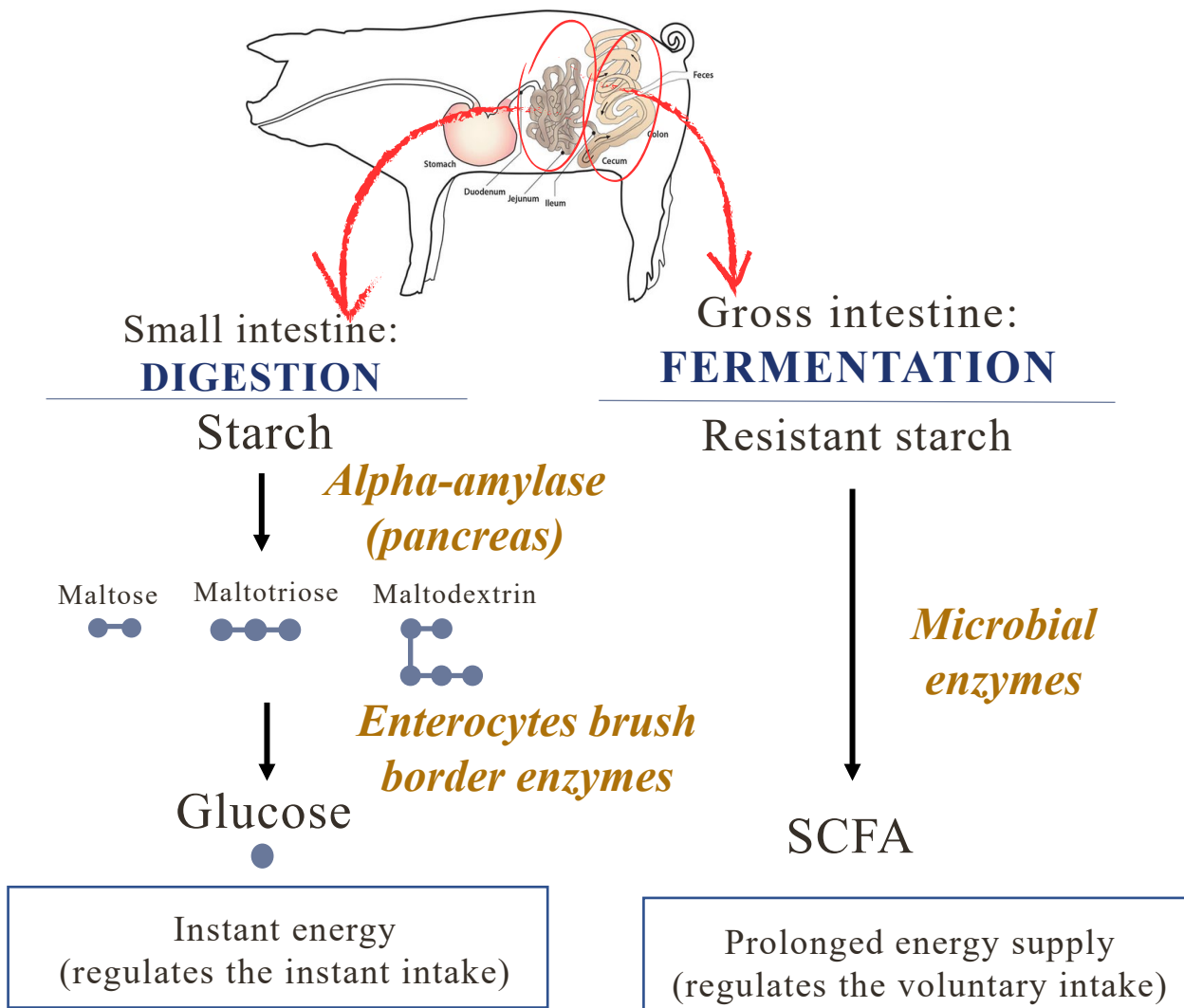
- In 2022, 97,35% of Italian pork carcasses belonged to the heavy pig category (carcass weight > 110,1 kg) (Anas, 2023).
- Advancements in genetics have significantly enhanced pork feed efficiency and led to the production of lean carcasses with minimal fat content.
 - Over 15% of pigs at the age of 9 months are too lean for the needs of the ham industry (INEQ, 2014).
 - Revision of the production guidelines for the major Italian PDO hams (carcass weight: 110,1 – 168 kg) (2023)
- Approaches to enhance adiposity (Malgwi et al., 2021) :
 - utilizing pig genotypes with high-fat deposition capacity,
 - raising the slaughter weight,
 - adjusting the dietary energy/protein ratio,
 - increasing the pigs' energy intake.



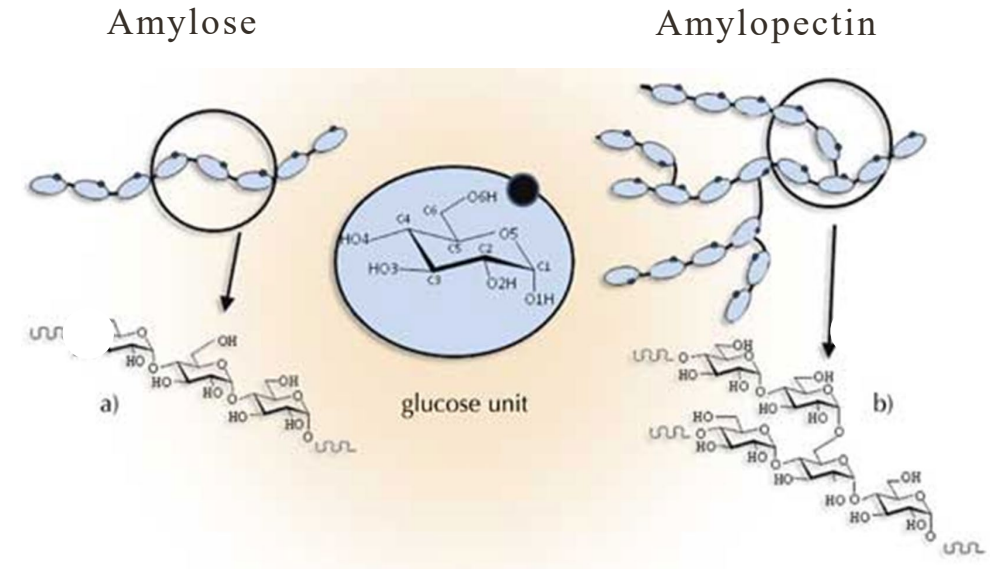
CORN: A PRIMARY SOURCE OF CARBOHYDRATES IN PIG DIETS



STARCH UTILIZATION



STARCH



	Amylose	Amylopectin
Regular starch	20 – 30 %	70 – 80%
Waxy starch	~ 1%	~ 99%

To investigate the effect of a highly digestible corn (waxy type) in the diet on growth performance, carcass characteristics, and meat quality of heavy pigs, with a focus on differences between sexes.

MATERIAL AND METHODS

Animals and Diets

CON

6 BARROWS



6 GILTS



76.7±2.0 kg

WAX

6 BARROWS



6 GILTS



79.5±2.0 kg

	CON	WAX
Corn (%)	44	44
Gross Energy (Kcal/Kg)	3876.5	3881.3
Crude protein (% DM)	12.55	14.50
Fat (% DM)	3.84	3.76
Starch (% DM)	48.33	47.92

Trial duration:
141 days

MATERIAL AND METHODS

Statistical analysis

$$y_{ijk} = \mu + D_i + S_j + D_i \times S_j + A_k + \varepsilon_{ijk};$$

where:



y_{ijk} = dependent variables;

μ = average common to all the observations;

D_i = fixed factor i^{th} diet (CON and WAX);

S_j = fixed factor j^{th} sex (barrow and gilt);

$D_i \times S_j$ = interaction between fixed factors;

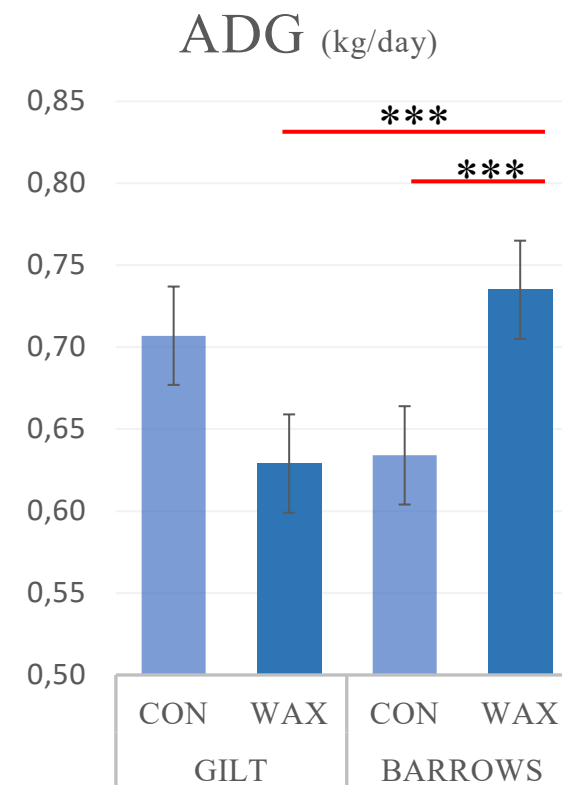
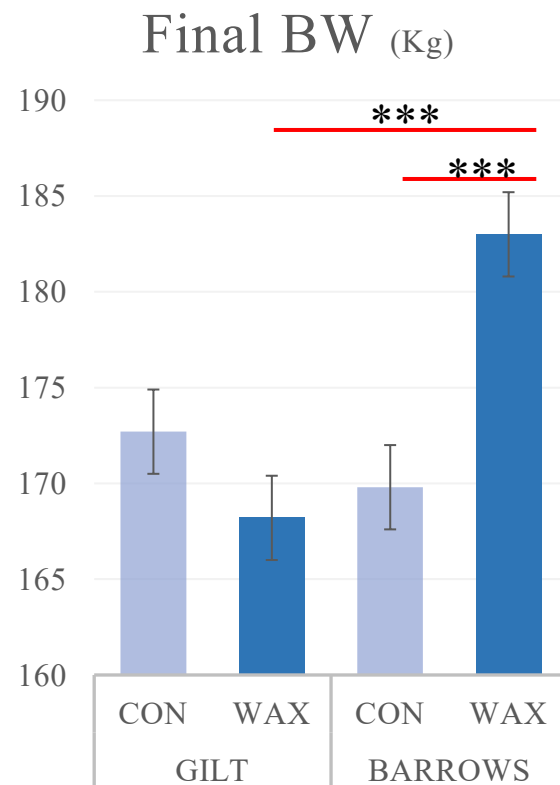
A_k = random factor k^{th} animal (24 animals) considered within diet;

ε_{ijkz} = random error.



RESULTS

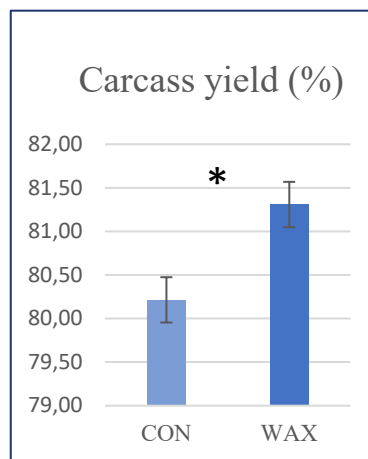
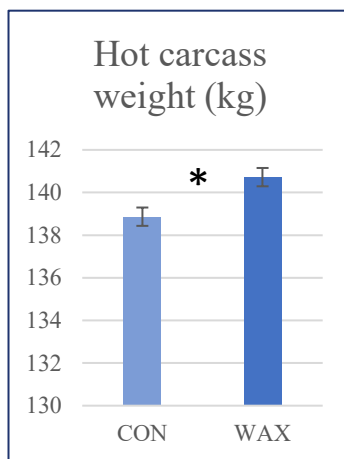
Growth performance



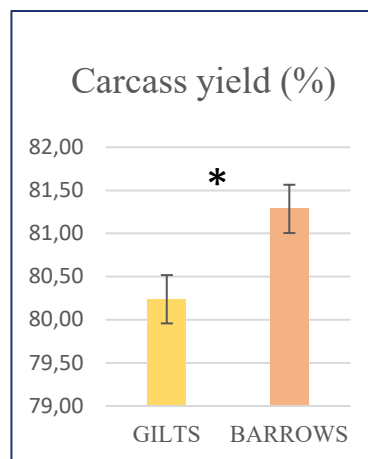
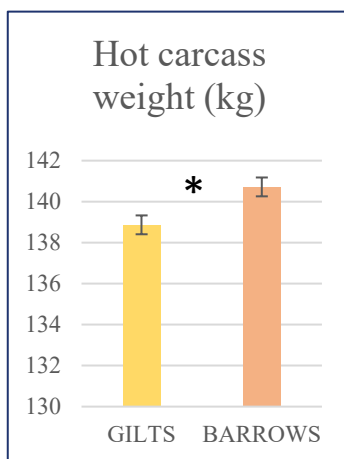
RESULTS

Carcass characteristics

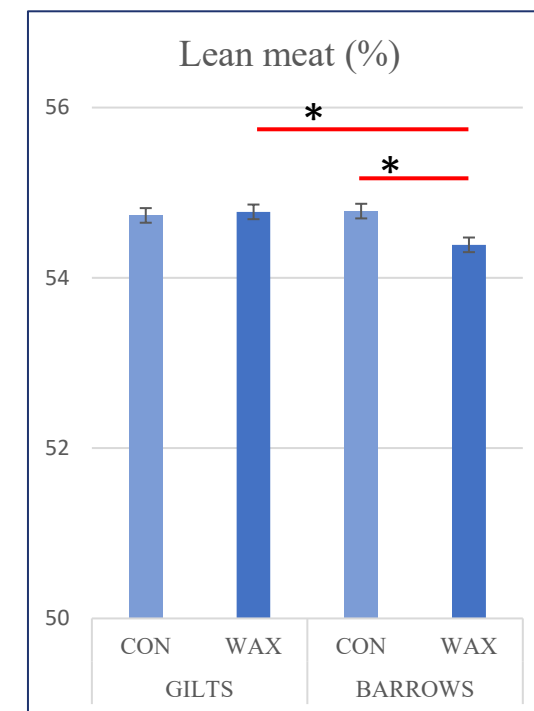
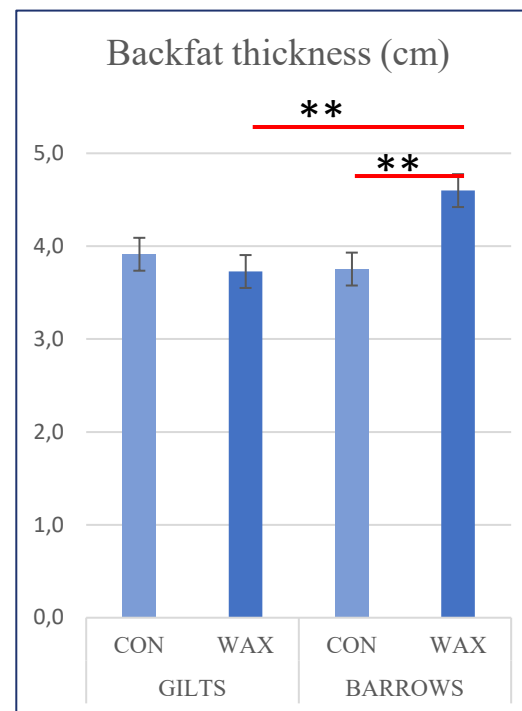
Diet



Sex



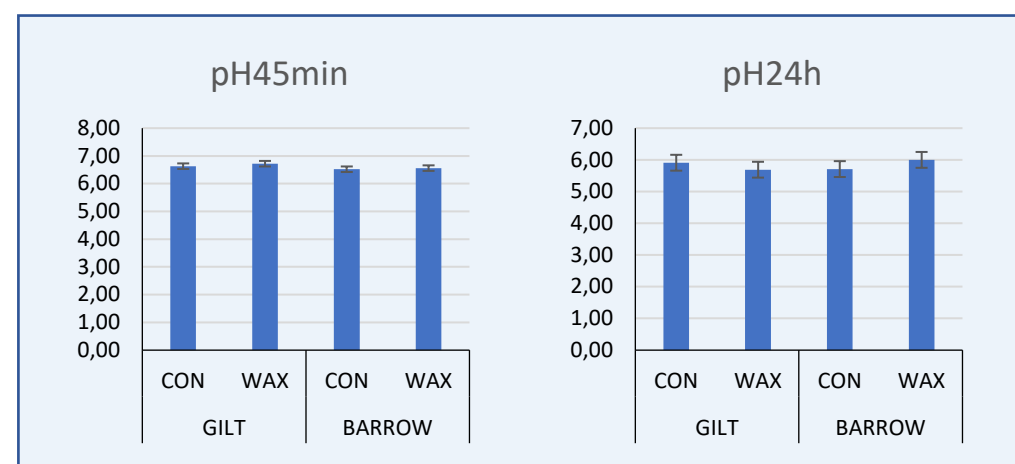
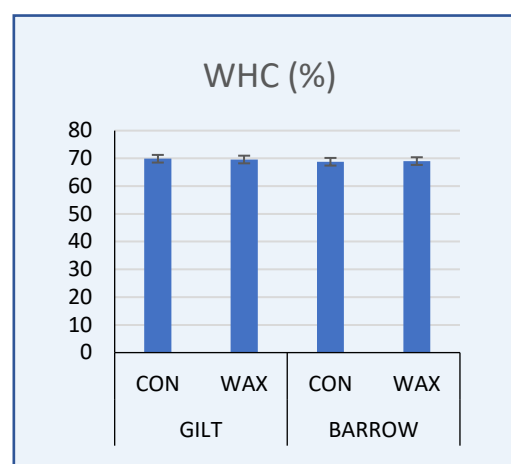
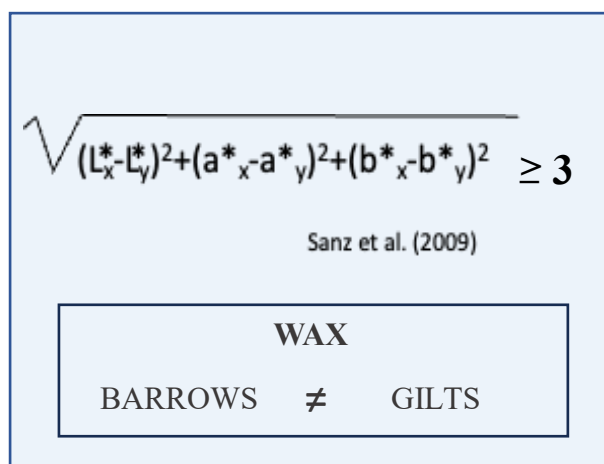
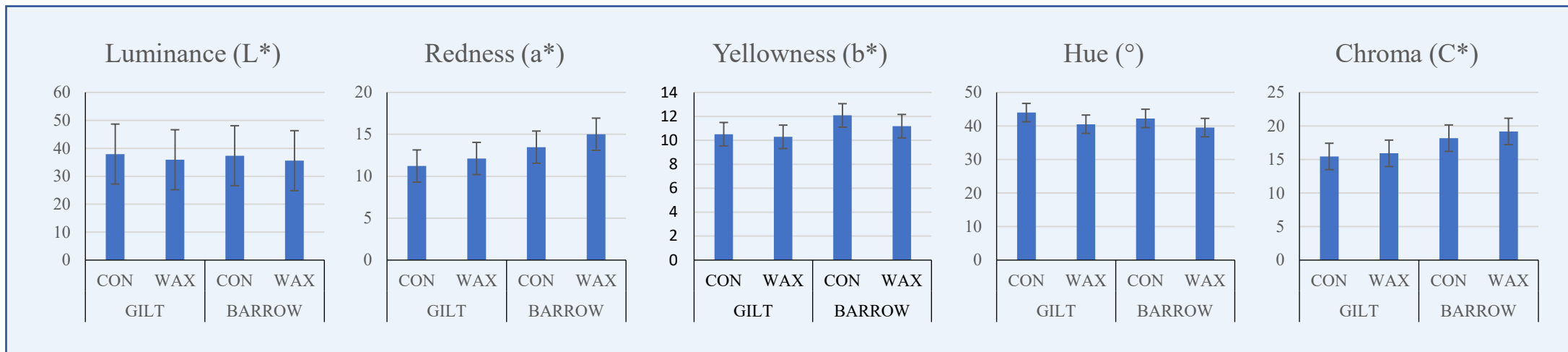
Diet × Sex



All carcasses belonged to the HU class
of SEUROP classification

RESULTS

Meat quality of *Longissimus dorsi* muscle



RESULTS

Proximate composition of *Longissimus dorsi* muscle (g/100 g of sample)

Dry matter

Crude protein

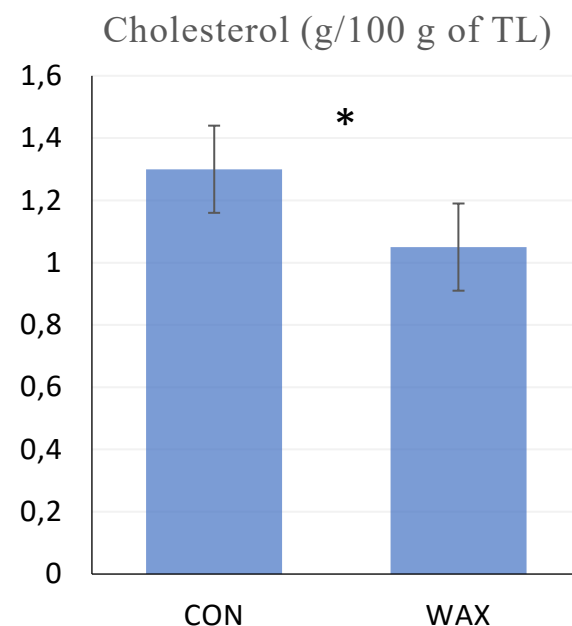
Ether extract

Ash

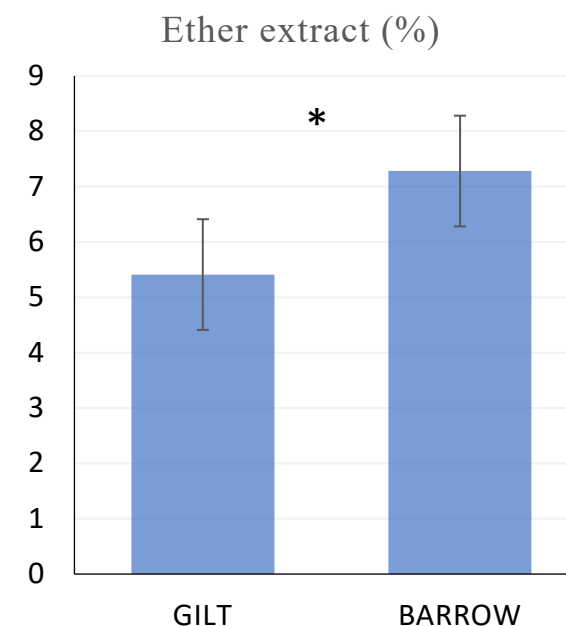
Cholesterol (mg/100g of meat)

Cholesterol (g/100 g of TL)

Diet



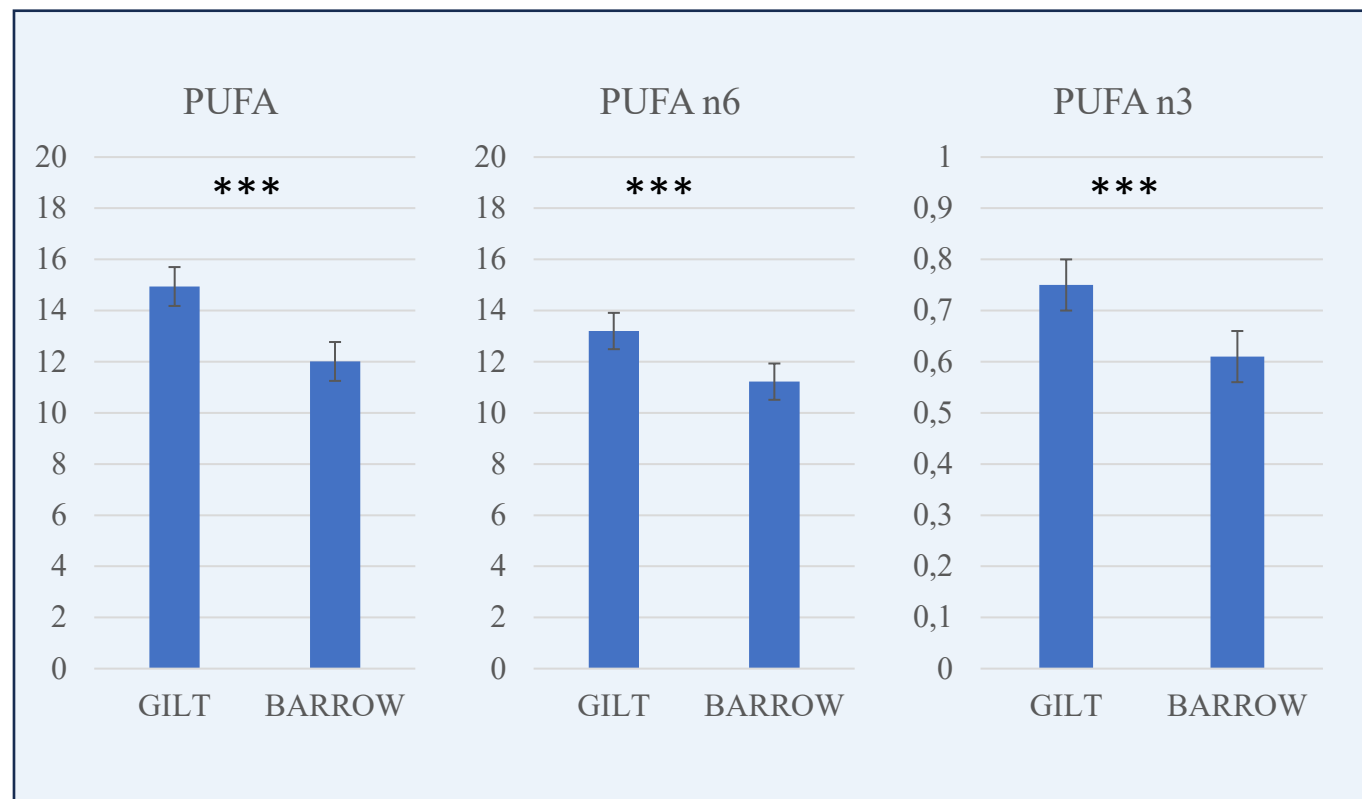
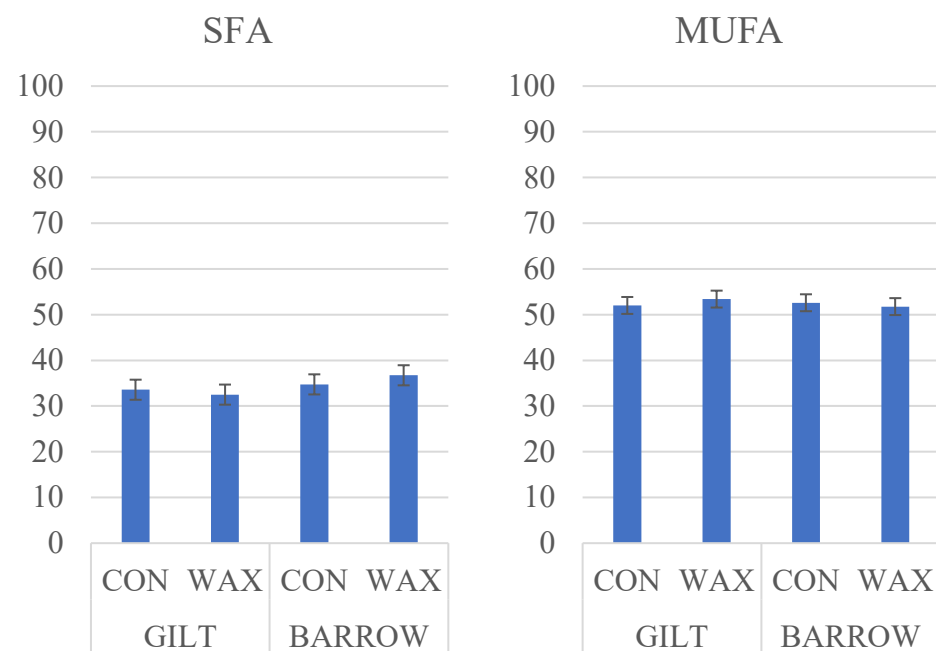
Sex



RESULTS

Fatty acids composition of *Longissimus dorsi* muscle (g/100 g of total fatty acids)

Sex



CONCLUSIONS

Incorporating waxy corn into the diet for heavy pigs increases carcass fatness in barrows, but not in gilts, without compromising carcass value or adversely impacting meat quality.





THANK YOU FOR
YOUR ATTENTION!

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PLAS TEAM
Livestock Farming, Animal Food Quality And Sustainability



PIONEER

A special thanks to Dr. Campidonico Luca for his contribution to this study.