

DIETARY LYSINE AND PROTEIN FOR ORGANIC GROWERFINISHER PIGS

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INTRODUCTION- THE CHALLENGE

Feed for organic grower-finisher pigs

- Must be homegrown and local protein sources should be used
- Addition of synthetic amino acids is not allowed

Despite differences, organic pigs are often fed according to conventional protein standards

- Different needs due to thermoregulation and locomotion
- Roughage contributes with nutrients, especially protein
- Lysin is low in protein sources of plant origin

Leading to protein oversupply

- Low feed efficiency and higher nutrient excretion



OBJECTIVES



To determine organic grower-finisher pigs' physiological requirement for ileal digestible lysine



To determine the nutrient contribution from roughage intake for organic grower-finisher pigs



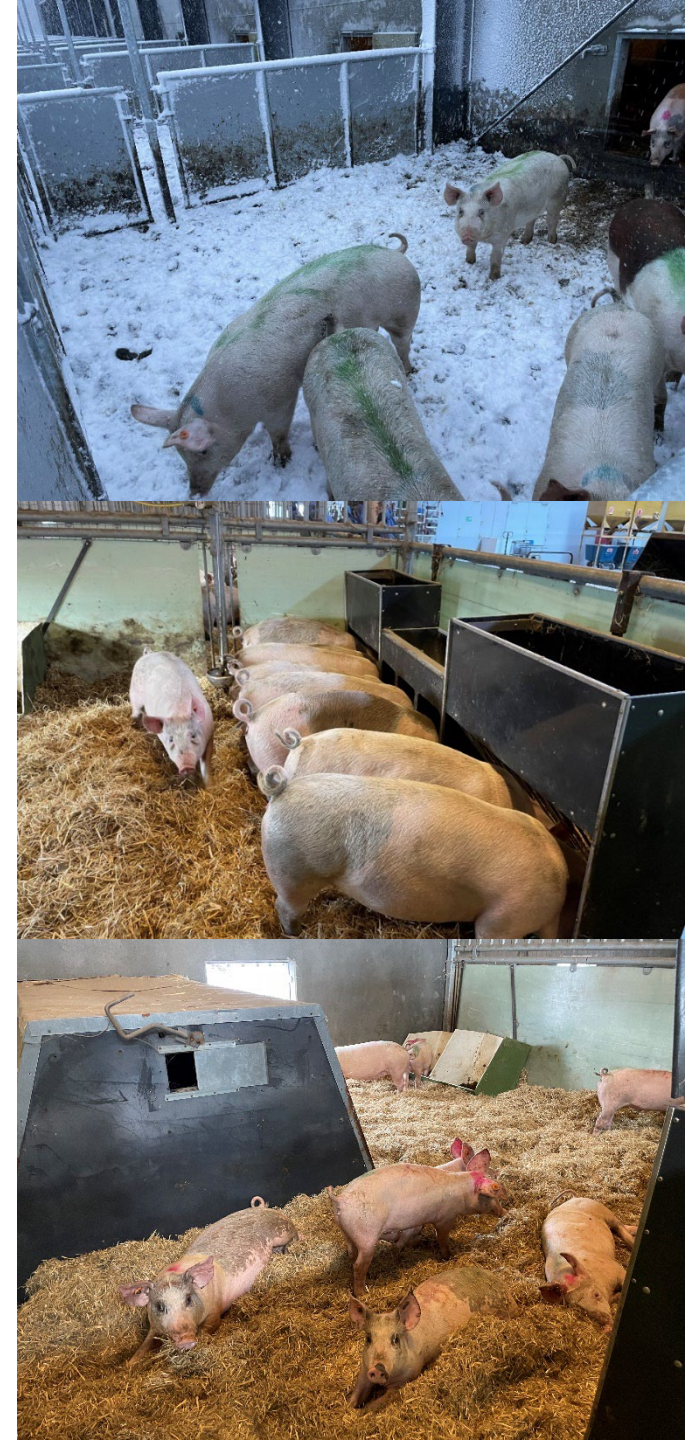
MATERIALS AND METHODS

Animals and treatments

- 150 pigs (free range: Topigs Nordsvin × Duroc)
- 31.3 kg (± 4.33) at arrival
- 5 treatments ~ 5 levels of lysine/protein
- 30 pigs per treatment → in 3 pens
- Sent to slaughter twice ~ 112 kg

Registrations

- Daily intake of concentrate and roughage (pen)
- Weight (pig): 5 times throughout the experiment
- Meat percentage and slaughter weight (from slaughterhouse)



DIETARY TREATMENTS

Feeding
1.6-3.0 kg/ day
Twice daily
Semi ad lib

Organic grains and
protein feed

	Treatment				
	1	2	3	4	5
Ingredients, %					
Barley	20.0	20.0	20.0	20.0	20.0
Wheat	19.9	18.0	16.1	14.2	12.3
Rye	17.0	17.0	17.0	17.0	17.0
Fava beans	12.0	12.0	12.0	12.0	12.0
Oat	8.00	8.00	8.00	8.00	8.00
Grass protein	7.23	8.88	10.5	12.2	13.8
Rapeseed cake	4.00	4.00	4.00	4.00	4.00
Sunflower cake	4.00	4.00	4.00	4.00	4.00
Peas	4.00	4.00	4.00	4.00	4.00
Wheat bran	1.28	1.56	1.84	2.11	2.39
Vitamin-mineral premix	5.24	5.17	5.08	5.00	4.94



PLANNED LYSINE AND PROTEIN

	Treatment, SIDlys g/kg				
g/ kg DM	6.1	6.5	6.9	7.3	7.7



PLANNED LYSINE AND PROTEIN

	Treatment, SIDlys g/kg				
g/ kg DM	6.1	6.5	6.9	7.3	7.7
Planned SID Lysine	6.99	7.44	7.89	8.34	8.79
Difference		0.45	0.45	0.45	0.45
Planned CP	172	179	187	195	203
Difference		7.72	7.73	7.81	7.68

ROUGHAGE

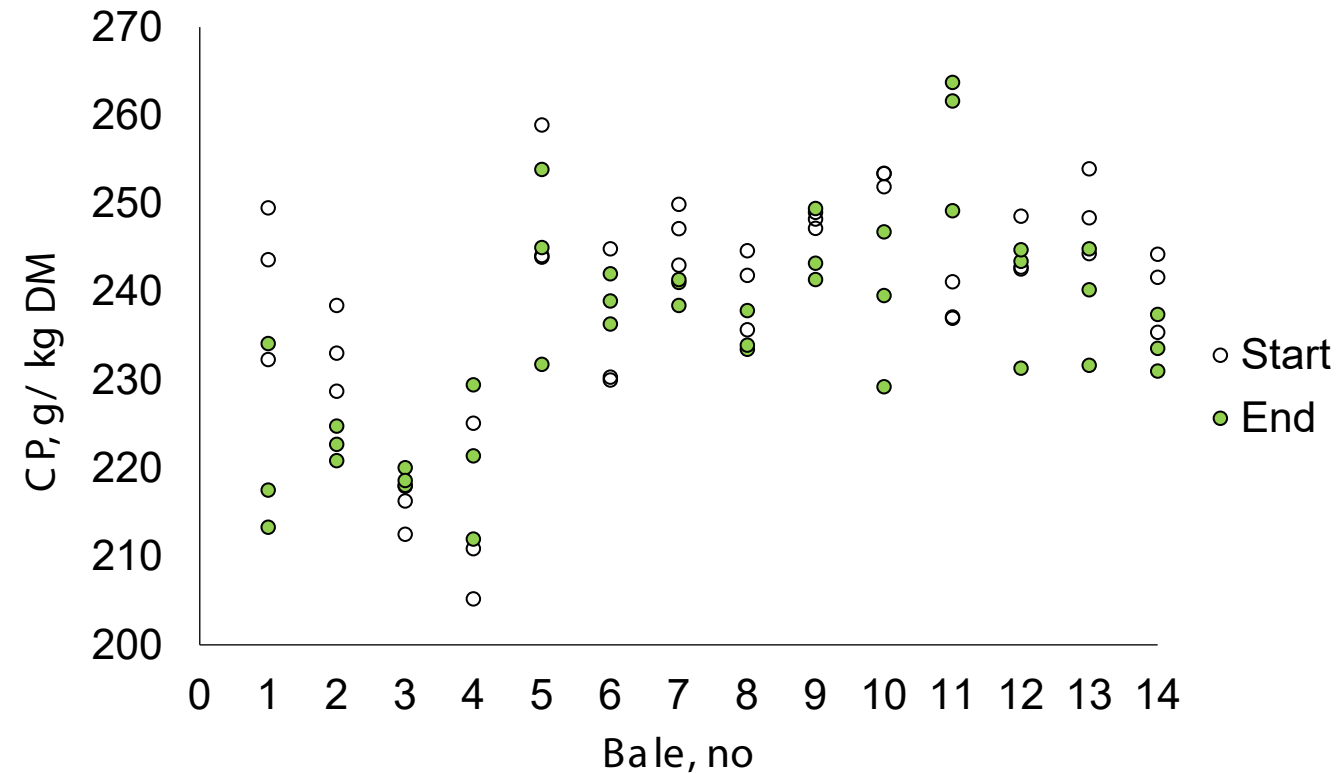
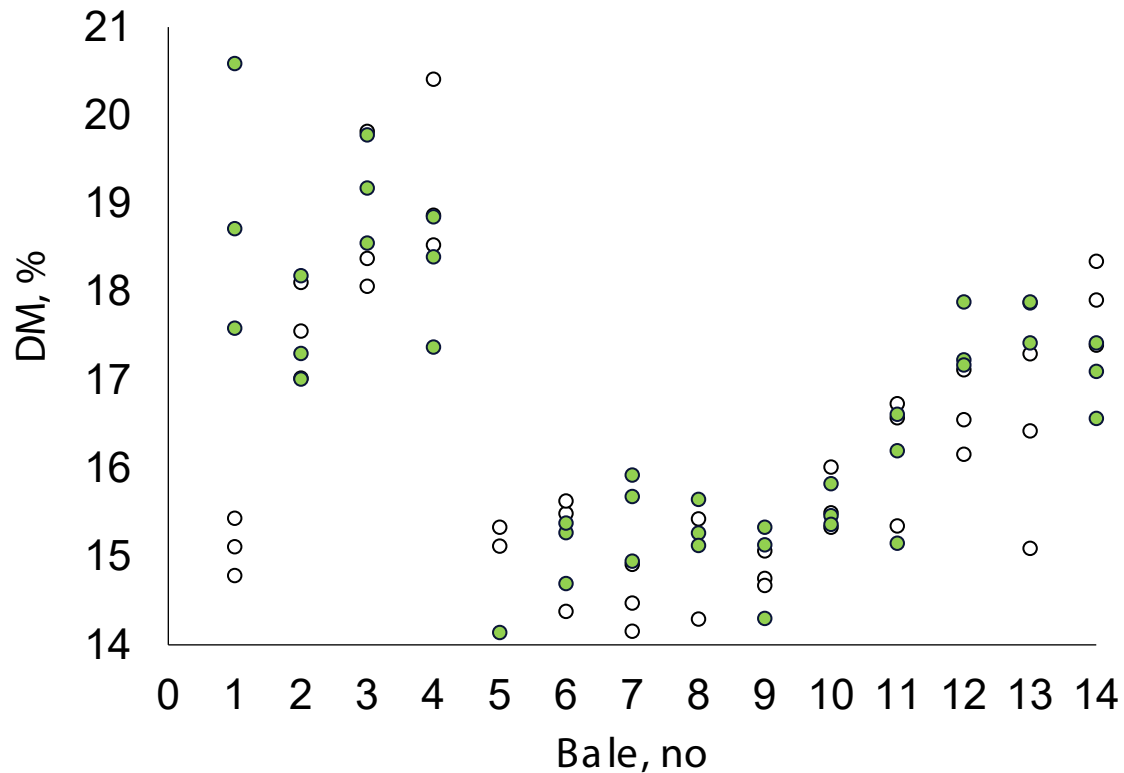
- Fed grass clover silage ad libitium
 - Supplied 2-10 kg/day pr. pen
- 1 bale per week (14 bags in total)
 - 3 start samples (day of opening)
 - 3 end samples (after 7 days)



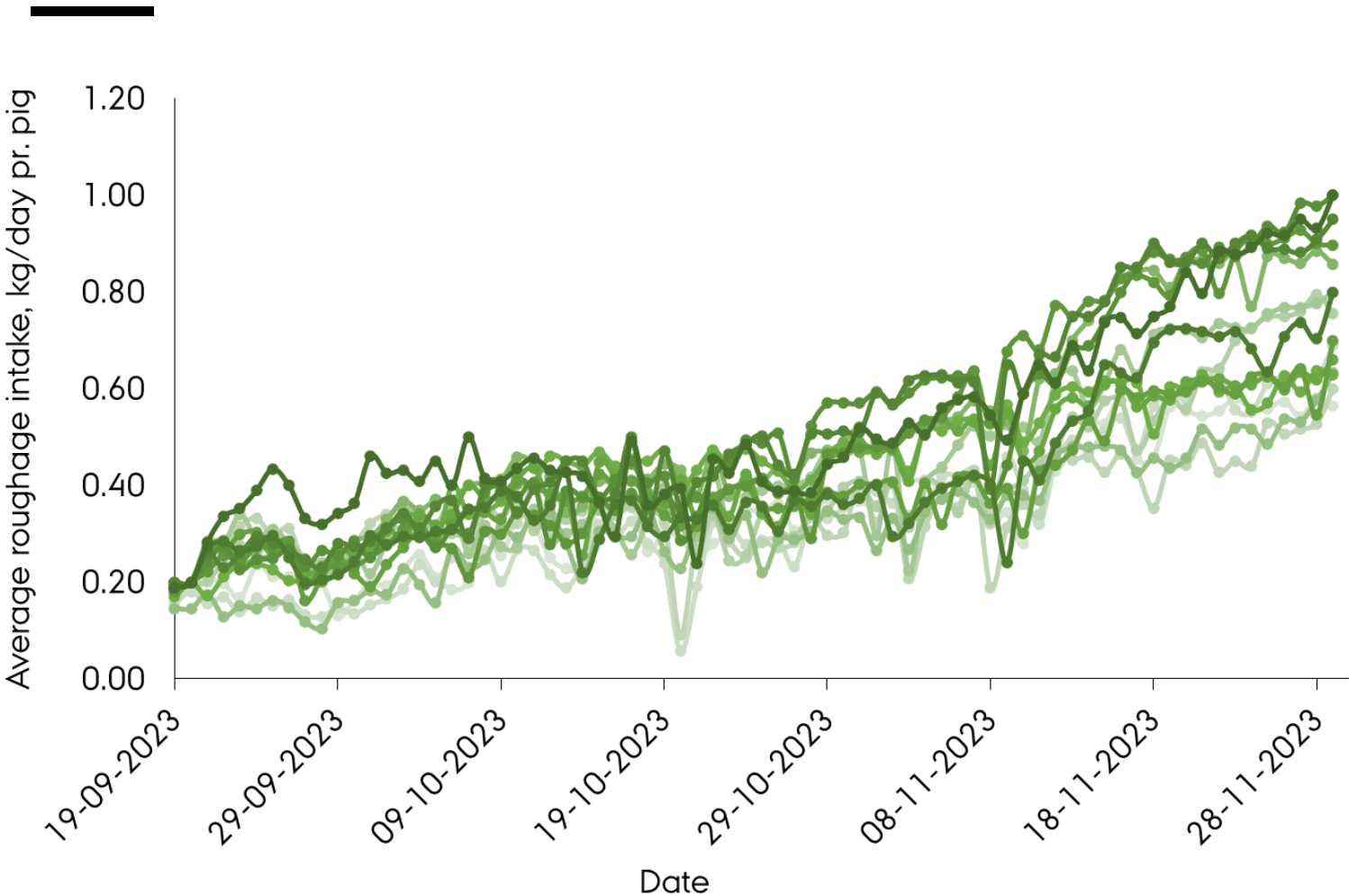
ROUGHAGE COMPOSITION

- Variation within the bag
 - DM % 2.3 SD
 - CP g/kg DM 14.2 SD
- Difference between start and end

- Variation between bags
 - 16.4 % DM (1.7 SD)
 - 237 g CP/kg DM (12.3 SD)



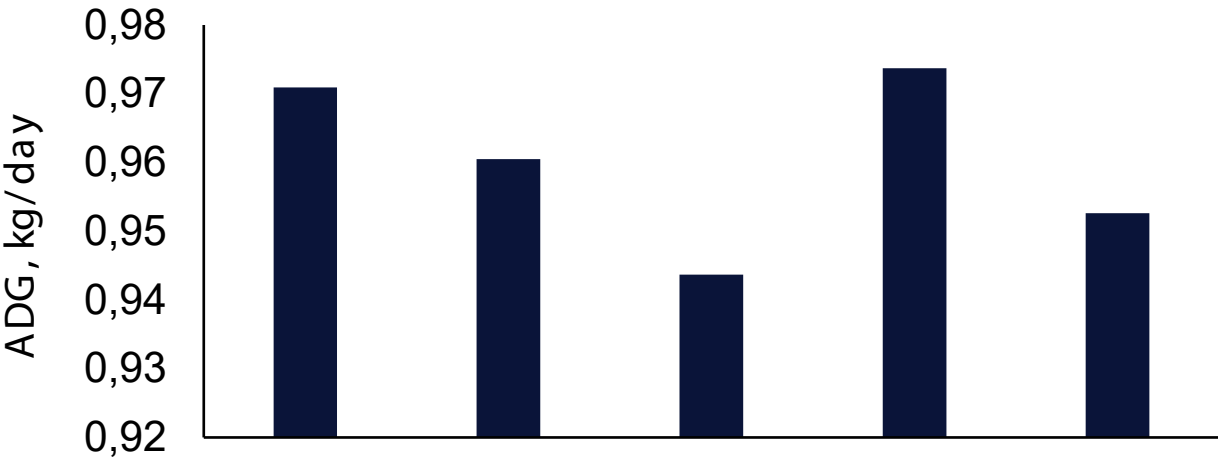
ROUGHAGEINTAKE(AS IS)



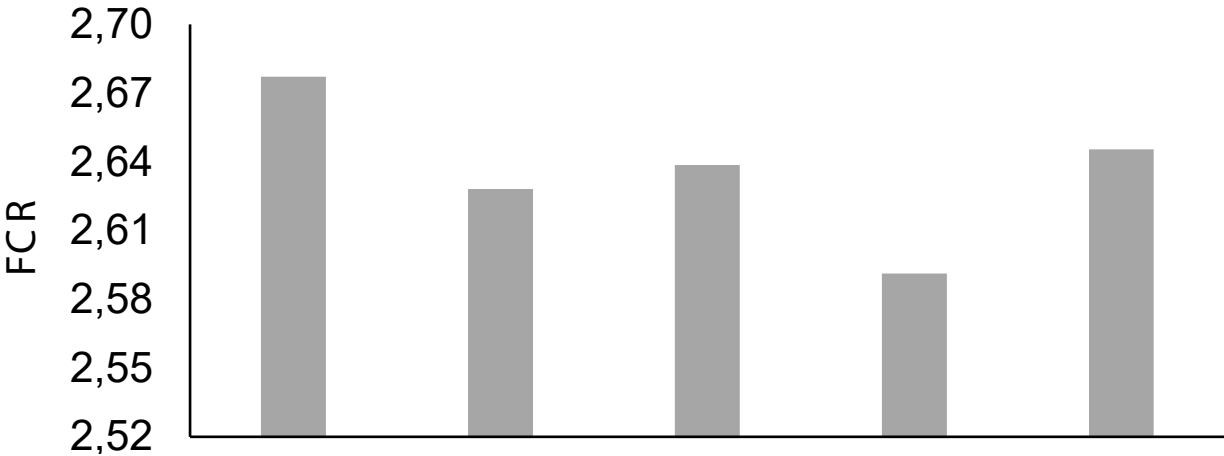
RESULTS

GROWTH PERFORMANCE AND FEED INTAKE

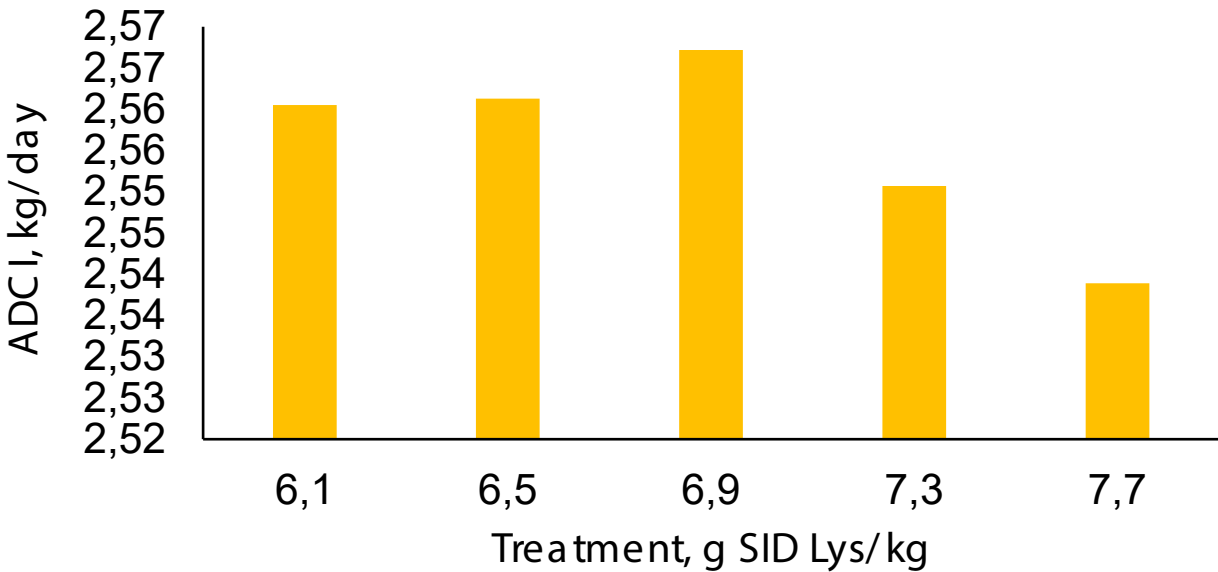
Average daily gain (NS)



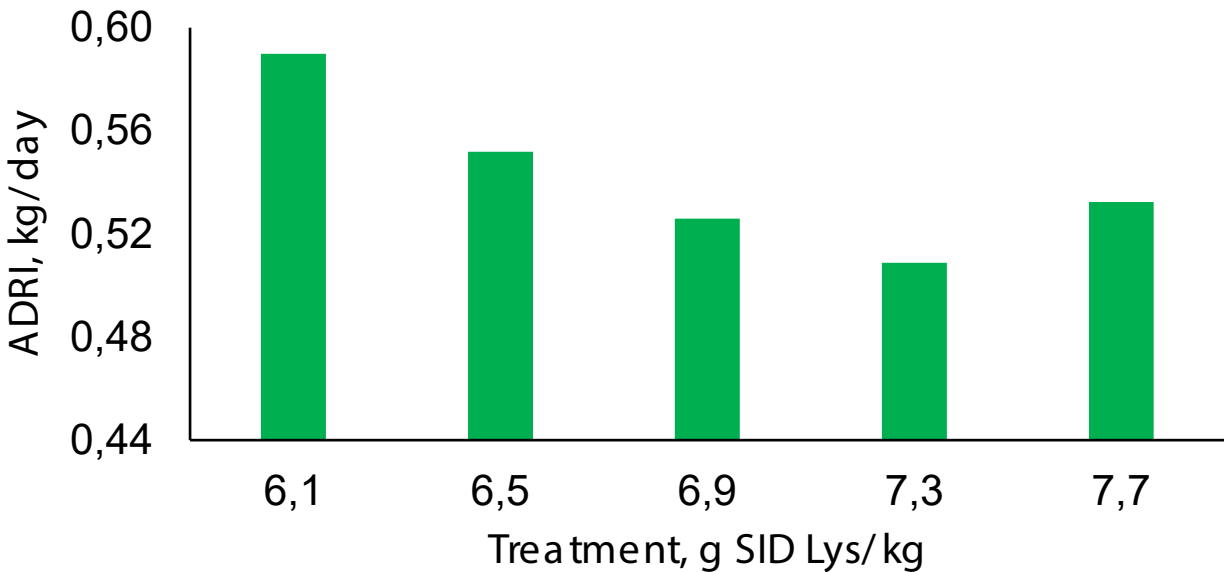
Feed conversion ratio (NS)



Average daily concentrate intake (NS)

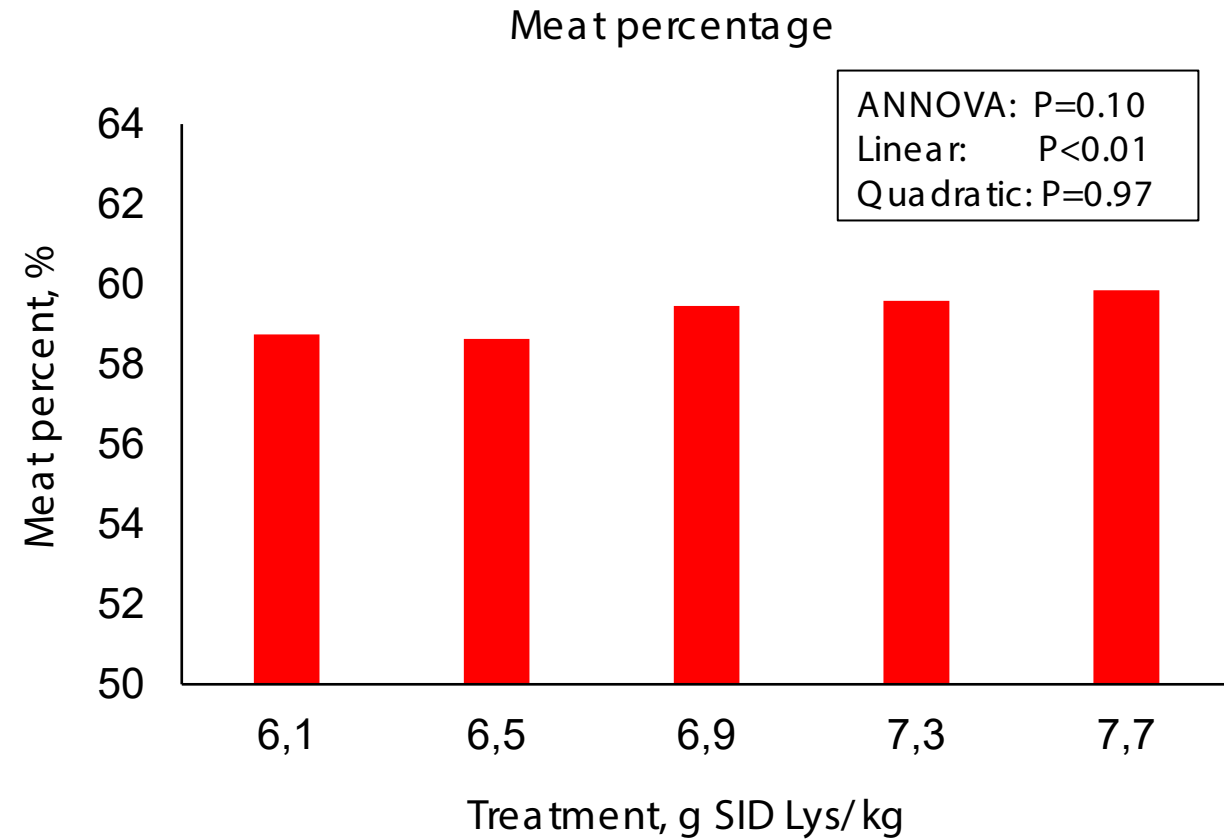
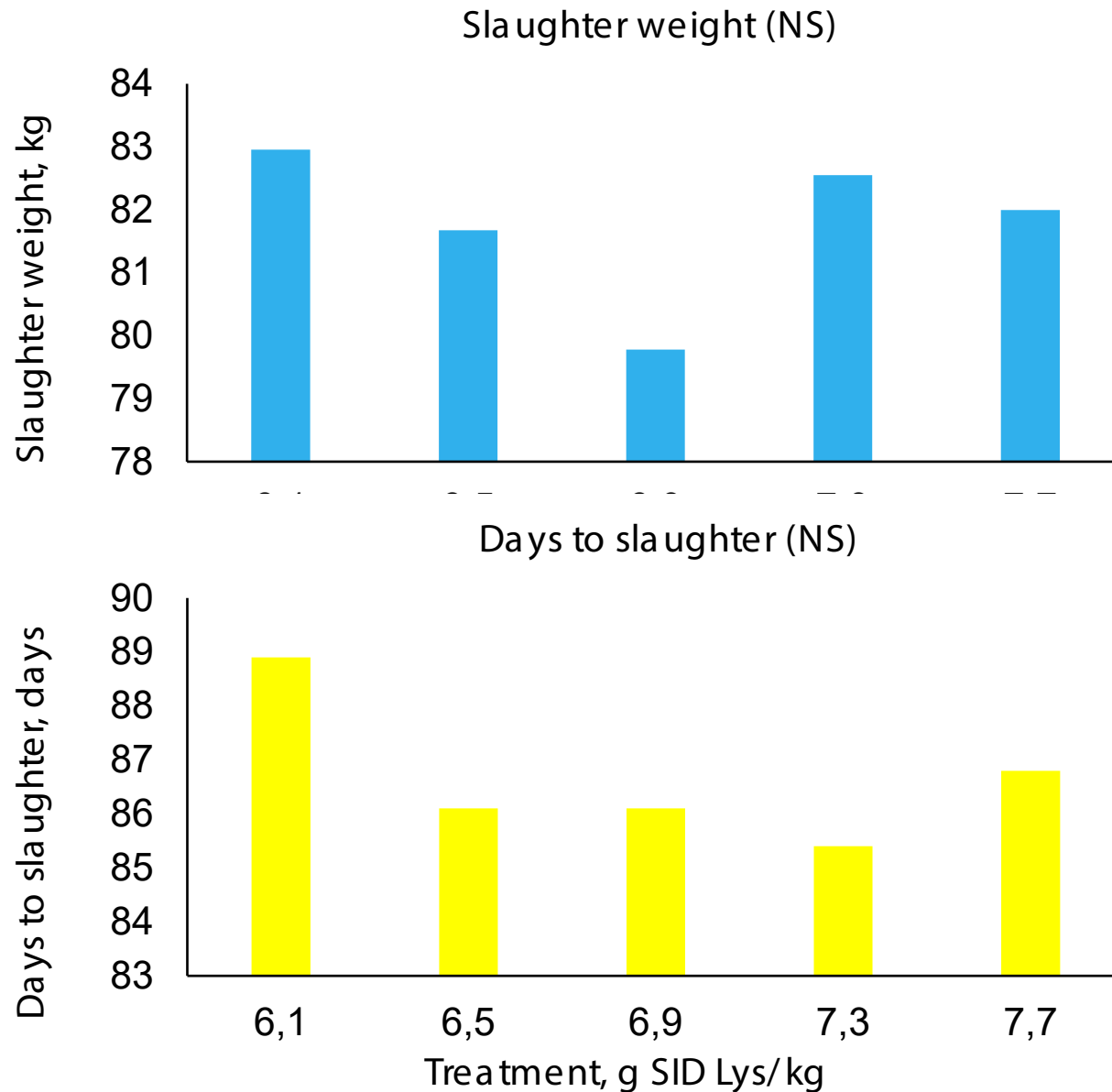


Average daily roughage intake (NS)



RESULTS

SLAUGHTER DATA



SUMMARY

- No effect on growth → the lysine content can be lowered
 - But it can affect the meat percentage
 - Balance between e.g. meat quality and economy
- The treatment with 7.3 g SID lysine looks interesting
 - Numerically highest ADG
 - Numerically lowest FCR and age at slaughter
- Variation in roughage intake and nutrient composition
 - Accounting for this when considering nutrient standards might be challenging



ONGOING

Nutrient balances and greenhouse emissions

Pigs fed same dietary treatments and grass clover silage



Thanks for your attention



The project ORIGIN is part of the Organic RDD x programme, which is coordinated by International Centre for Research in Organic Food Systems (ICROFS) in collaboration with the Green Growth and Development programme (GUDP) under the Danish Ministry of Food, Agriculture and Fisheries