

THE EFFECT OF STOCKING DENSITY ON HEAT STRESS IN FATTENING PIGS

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INTRODUCTION

- Regulation minimum floor area of fattening pigs
 - 0.65m²/animal: 85-110kg
 - 1.00m²/animal: >110kg
- In most farms: 0.65-0.85m²/animal where fattening pigs are often sent to slaughter at different timepoints
- Positive results of lower stocking density (SD) in thermoneutral environment:



Less risks on spread of disease ower cortisol levels ncreased feed intake and grdvothver soiling levels Less aggression at feeder



To assess the extent to which a lower stocking density can reduce heat stress in fattening pigs

TREATMENTS



(12 repeated Start-up at 1.3m²

(11 repeated Start-up^oat 1.0m² (6 repeated Start-up at 0.8m²

Barrows and gilts (Piétrain x Topigs TN70)

The treatments were randomized per compartment

Half-grid floor Pen size: 4.8m² 4 compartments

MATERIAL&MET

HODS

TRIAL PERIOD

- Parameters:
 - Physiological: observation points 1-12
 - Performance: for every period





PARAMETERS

physiological parameters



Average daily feed intake [g/day]

> Average daily gain [g/day]

Breathing frequency [bpm]

Rectal temperature [°C]

MATERIAL&MET₆ HODS

Performance parameters

TEMPERATURE HUMIDITY INDEX (THI)

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(Lucas et al., 2000; St-Pierre et al., 2003; Vitt et al., 2017)

HODS

STABLE CLIMATE DATA

4 compartments: 1, 2, 3 & 4 in three different batches

Artificial heating to ±30°C in all compartments

with average max THI of 78.6 per day during the heat period

High relative humidity (RH) in compartment two

- Did not drop during artificial heating
- High RH outside air (60-100%)
- Higher THI due to higher RH from



BREATHING FREQUENCY



- The SD groups did not react differently from each other on the heat load (interaction term, P=0.532)
- The heat load did influence the breathing frequency within the SD groups (P<0.001)

RESULT_o

S

RECTAL TEMPERATURE

- The SD groups did not react differently on the heat load (interaction term, P=0.126)
- The heat load did influence the rectal temperature within the SD groups (P<0.01)





\triangle PARAMETERS – CONTRAST





Δ RECTAL TEMPER

- $\Delta \mathrm{T}_{\mathrm{rectal}}$ of $\mathrm{SD}_{\mathrm{0.8}}$
- was higher than SD_{1.0} (P=0.033)
- tended to be higher than SD_{1.3} (P=0.053)

- Less able to maintain internal metabolic temperature
 - Increased radiant heat emitted from pen mates?
 - Less floor area for sensible heat loss via conduction?



AVERAGE DAILY FEED INTAKE



- The SD groups did not react differently from each other on the heat load (interaction term, P=0.258)
- The heat load did decrease ADFI within the SD groups (P<0.001)

RESULT

AVERAGE DAILY GAIN

- The SD groups did not react differently on the heat load (interaction term, P=0.758)
- The heat load decreased the ADG (P=0.001)





AVERAGE DAILY FEED INTAKE AND GAIN



TAKE HOME MESSAGES

- 1. Higher increase of rectal temperature in the highest stocking density
 - Less ways to lose heat

- 2. Reducing the number of animals per m² did not improve performance during a period of higher heat load
 - But higher daily gain of lowest stocking density group



THANK YOU FOR YOUR ATTENTION

I'm happy to answer your questions

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