

The effect of increased energy and amino acid level in lactation diets on the performance of sows' piglets

ILVO

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Rationale

Energy metabolism in lactation

During lactation, sows need to consume a high amount of energy and amino acids

→ Can diet concentration affect nutrient intake?

Research question

Does the energy and amino acid level in the lactation diet affect the sow and her piglets?



Experimental design

- 3 rounds, in total 52 litters
- 2 diets: “standard” vs “concentrated”

- Measurements

- SOW:

- reproduction parameters
 - feed intake
 - body condition
 - colostrum sample
 - milk sample (at 2w)

- PIGLETS :

- All piglets until weaning (4 weeks)
 - 10 piglets per litter until 9 weeks
 - body weight (d0, d14, d28, w6, w9)
 - feed intake



Diet composition

	Standard	Concentrated
Ingredient, %		
Barley	25.47	20.00
Corn	15.00	17.04
Wheat	15.00	15.00
Wheat middlings	12.82	9.81
Toasted soybeans	10.64	16.00
Soybean meal	7.77	5.83
Palm kernels	3.00	2.61
Beet pulp	1.47	1.50
Soy hulls	1.47	2.00
Animal fat	-	1.79
Nutrient		
Net energy₂₀₀₇, MJ/kg	9.25	10
Crude protein, g/kg	155	165
Crude fat, g/kg	50	77
Crude fiber, g/kg	55	55
Crude ash, g/kg	61	61
SID Lys, g/kg	8	10



Diet provision

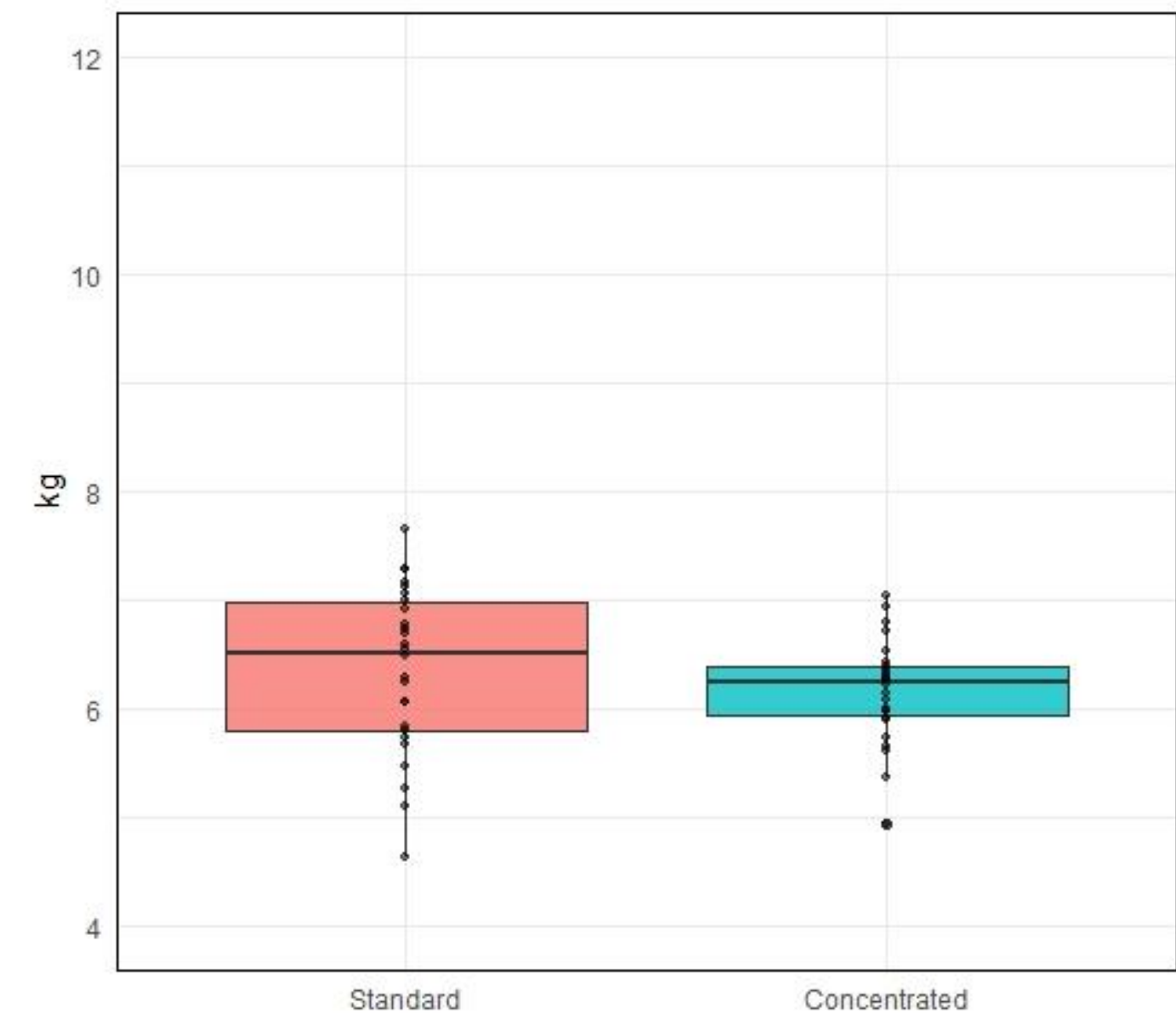
- Daily energy provision: similar until day 10 after weaning

	Standard	Concentrated	
MJ/kg	9.25	10	
D-7 – D-1	3.25 kg	3 kg	2x/day
D0	1 kg	1 kg	2x/day
D1	2 kg	1.8 kg	2x/day
D2	3 kg	2.8 kg	2x/day
D3	4 kg	3.7 kg	2x/day
D4	5 kg	4,6 kg	2x/day
D5	5.5 kg	5.1 kg	3x/day
D6	6.0 kg	5.6 kg	3x/day
D7	6.5 kg	6.0 kg	3x/day
D8	7.0 kg	6.5 kg	3x/day
D9	7.5 kg	6.9 kg	3x/day
D10	8.0 kg	7.4 kg	3x/day
D11- weaning	Ad lib	Ad lib	3x/day



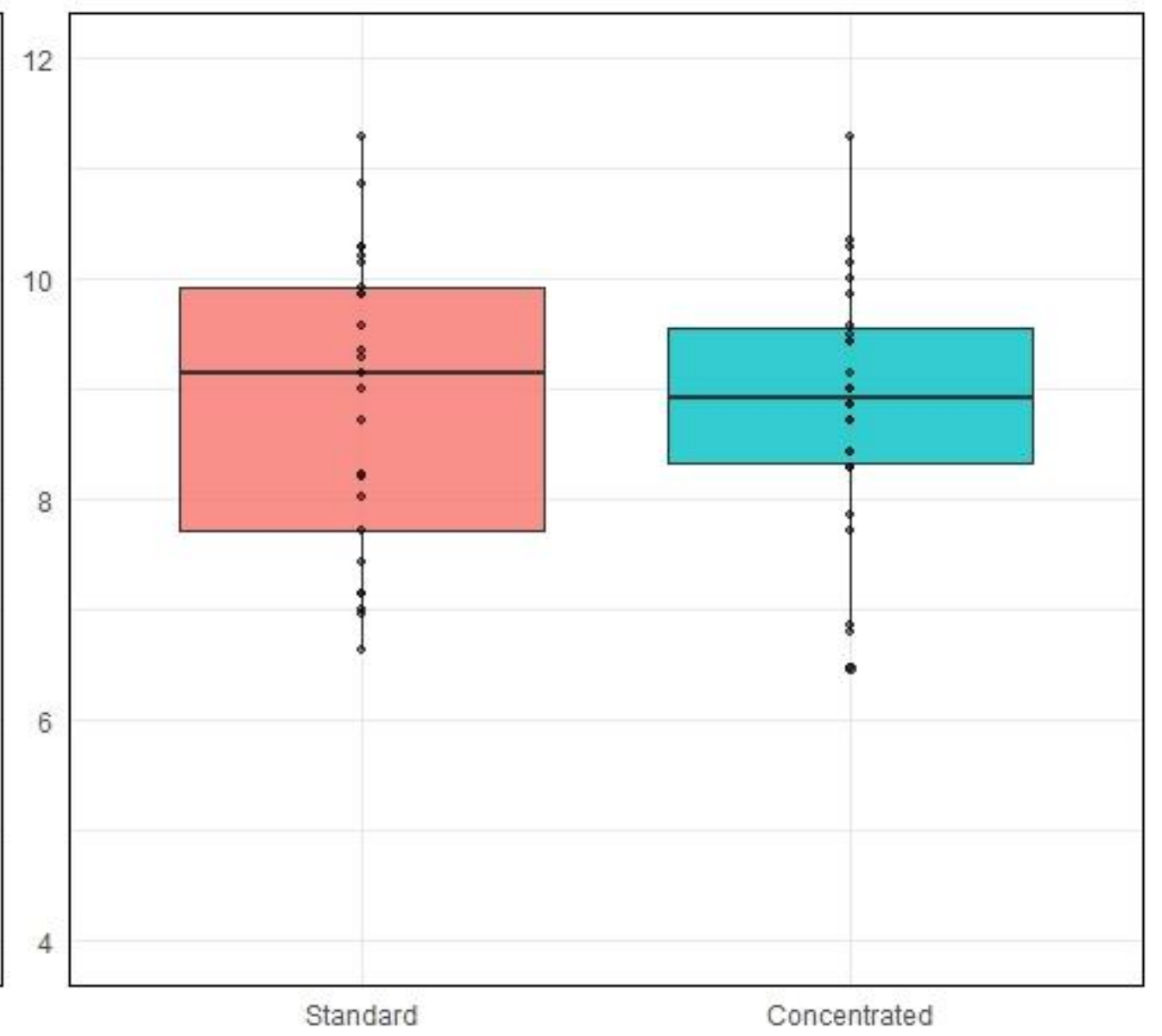
Results

Average daily feed intake during experiment



P= 0.181

Daily feed intake during last week of lactation

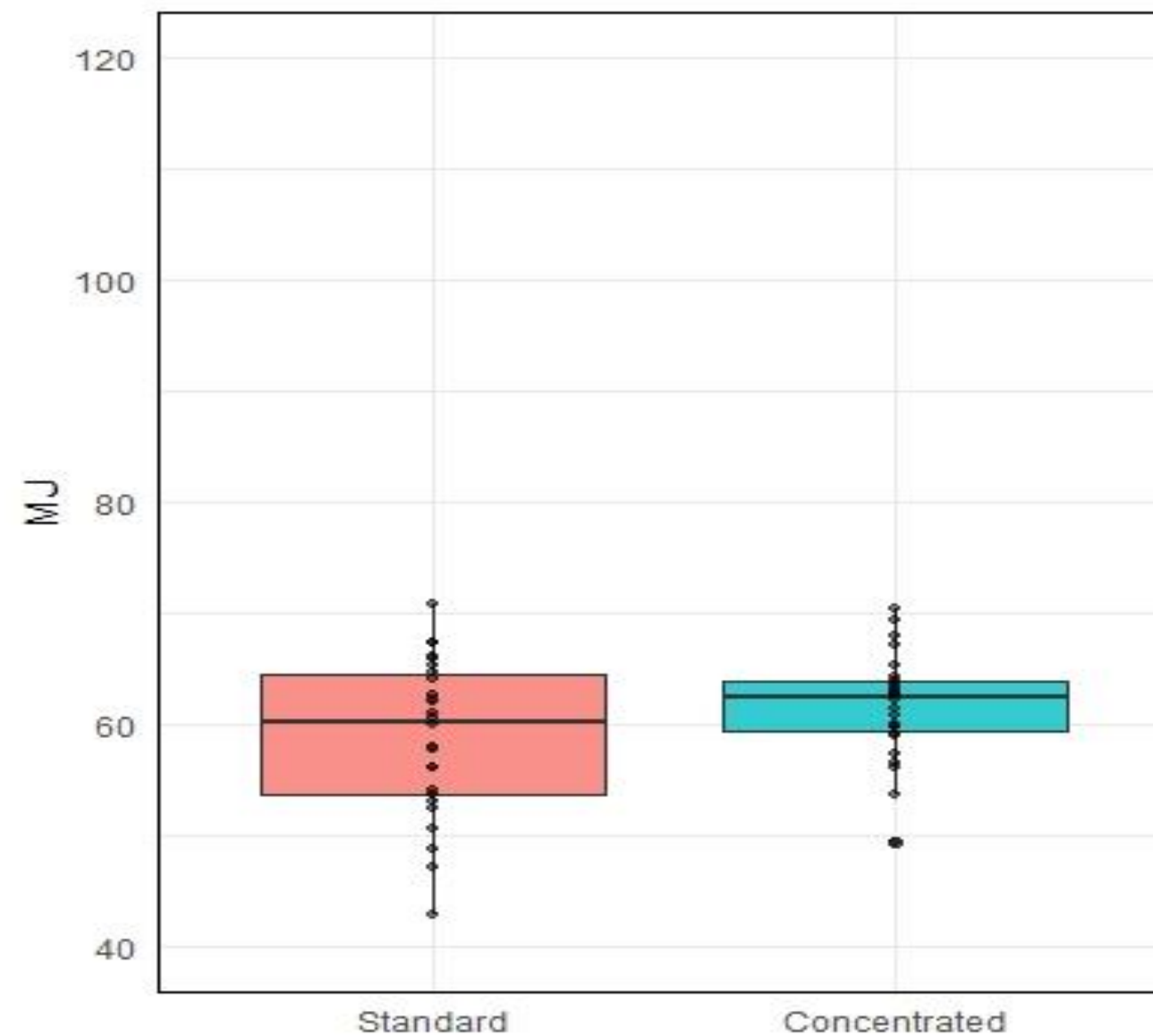


P= 0.712



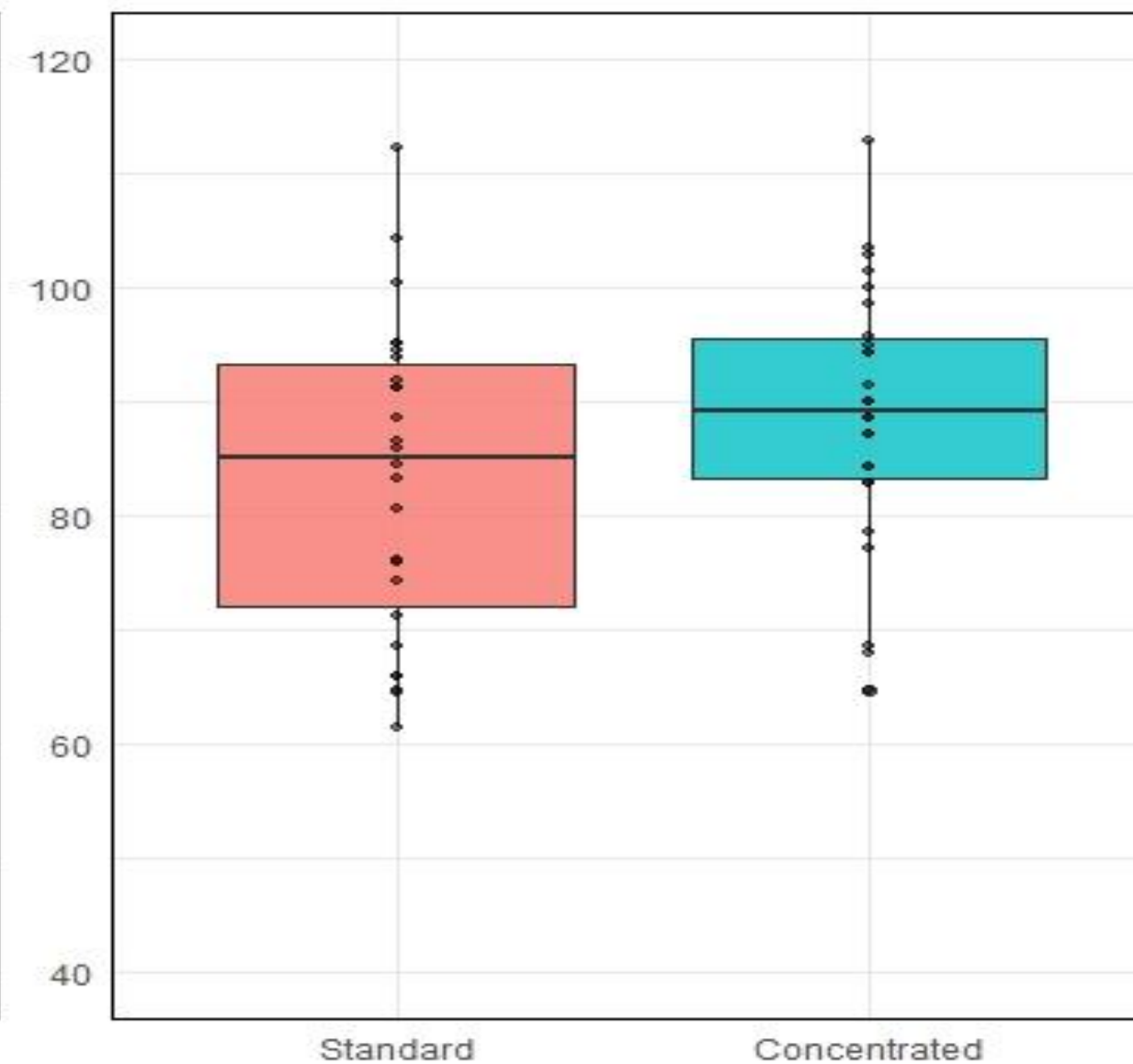
Results

Daily energy intake during experiment, MJ



P= 0.157

Daily energy intake during last week of lactation, MJ

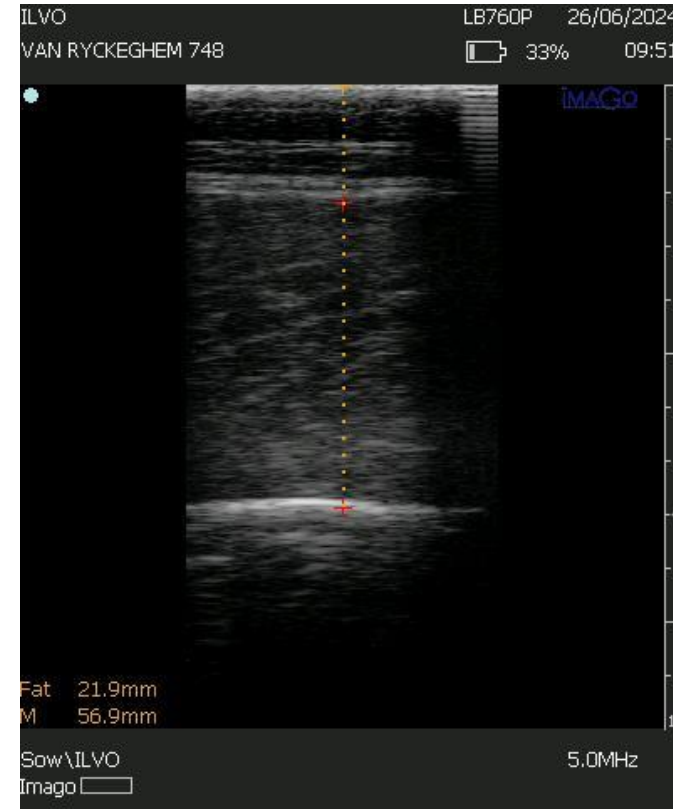
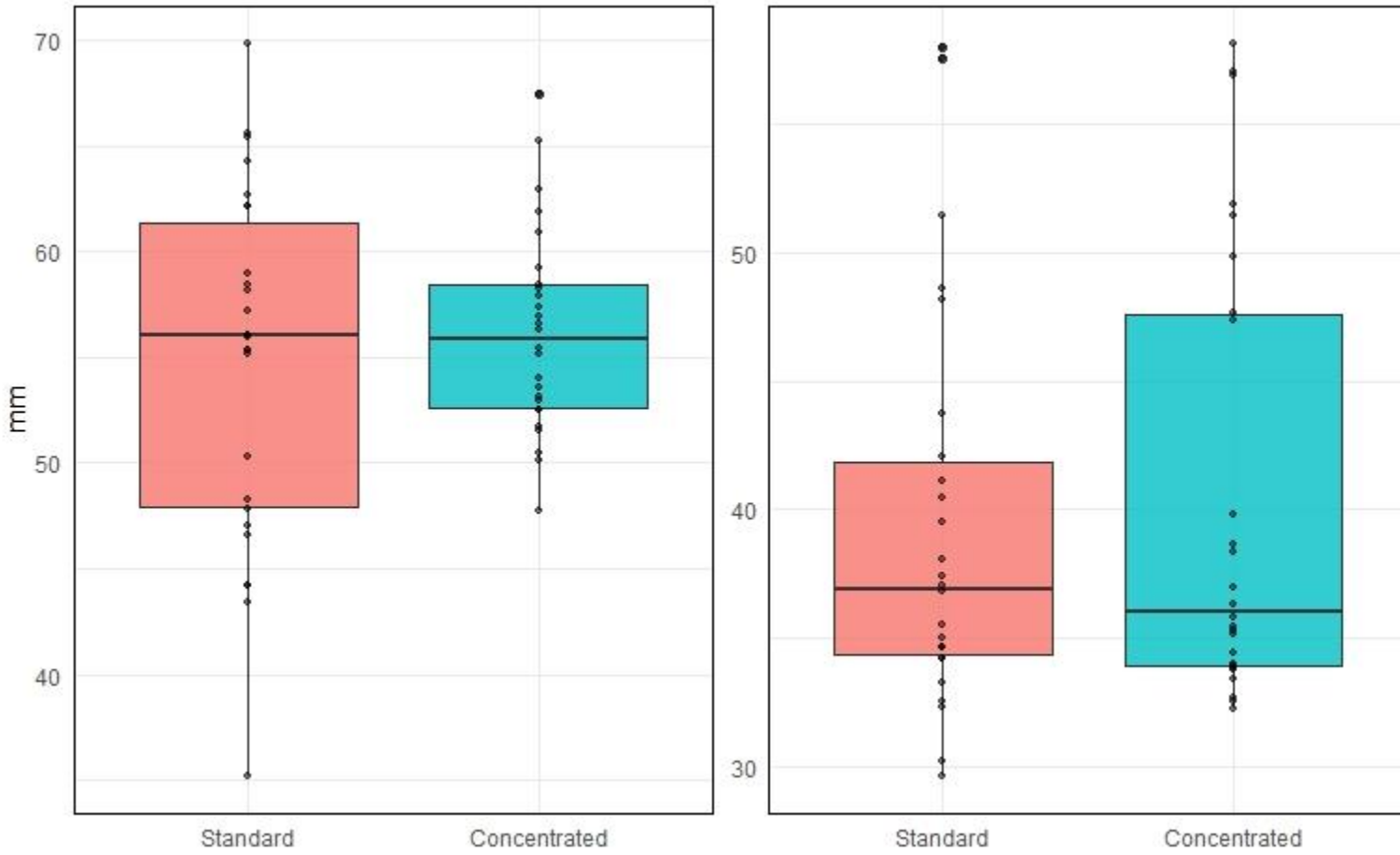


P= 0.107

Muscle thickness

Entrance in farrowing crates

Weaning

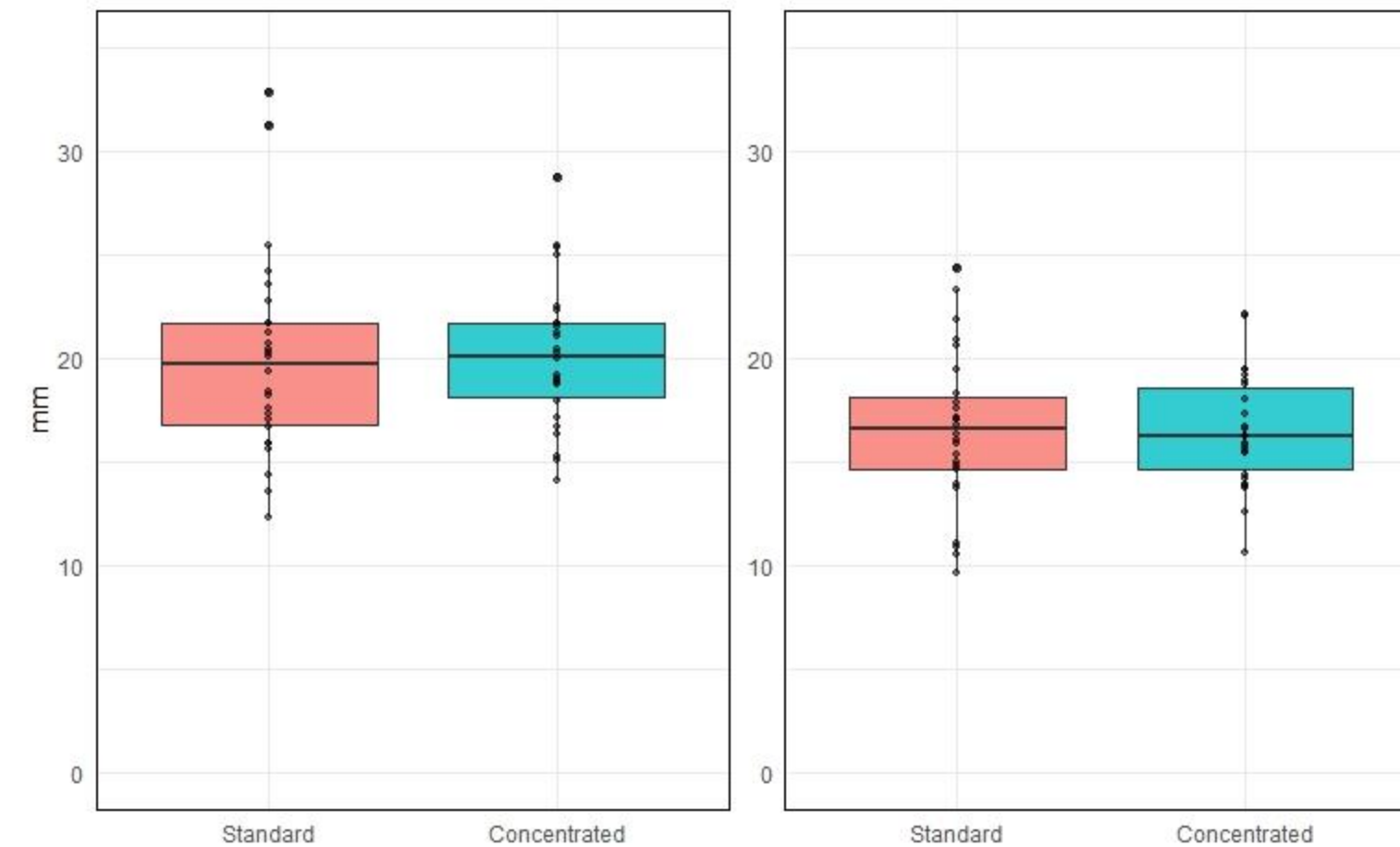


Ultrasound

Fat thickness

Entrance in farrowing crates

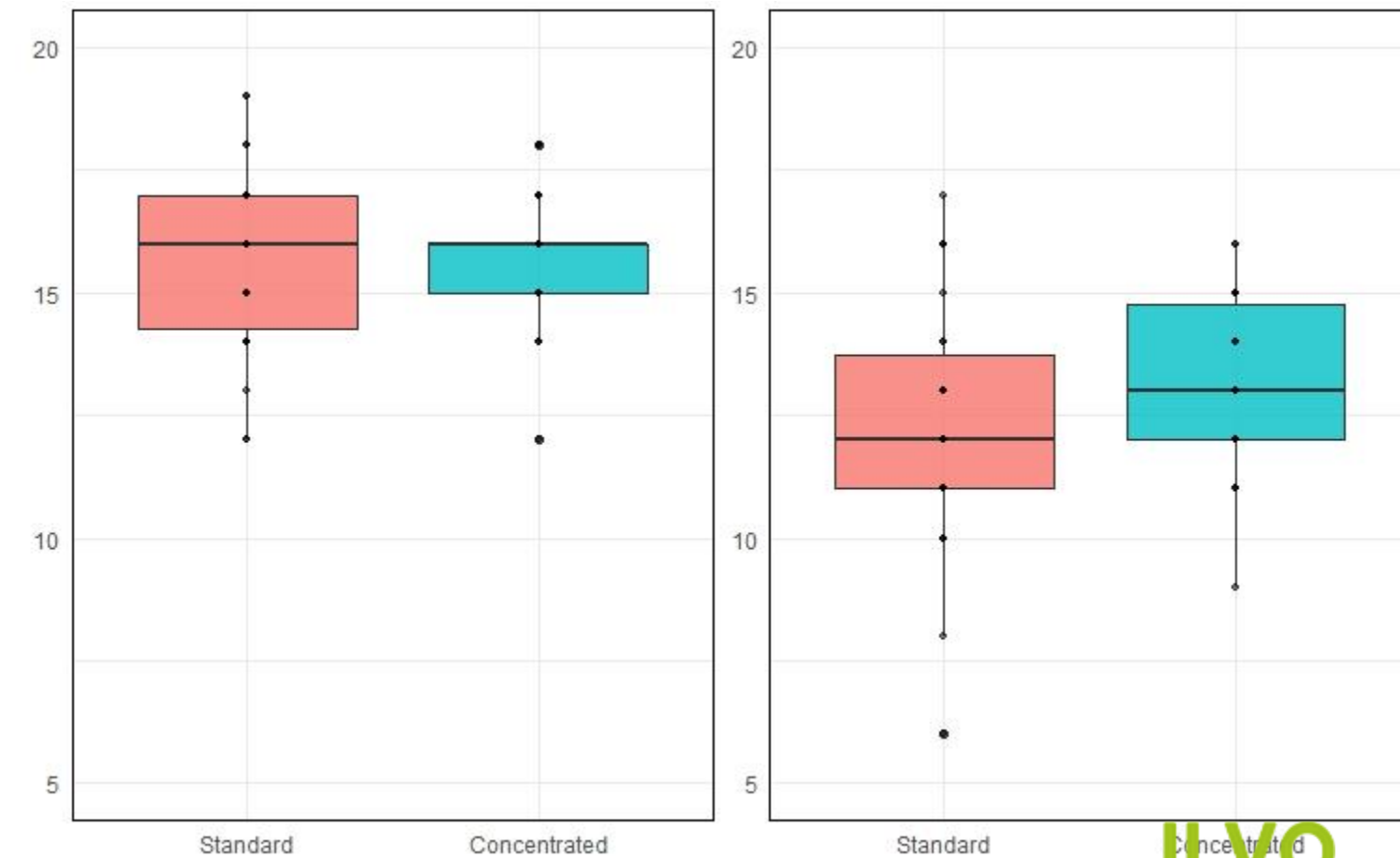
Weaning



- No clear effect on muscle or fat thickness ($P > 0.1$)
- Caliper: Higher value at weaning on concentrated feed ($P = 0.036$)

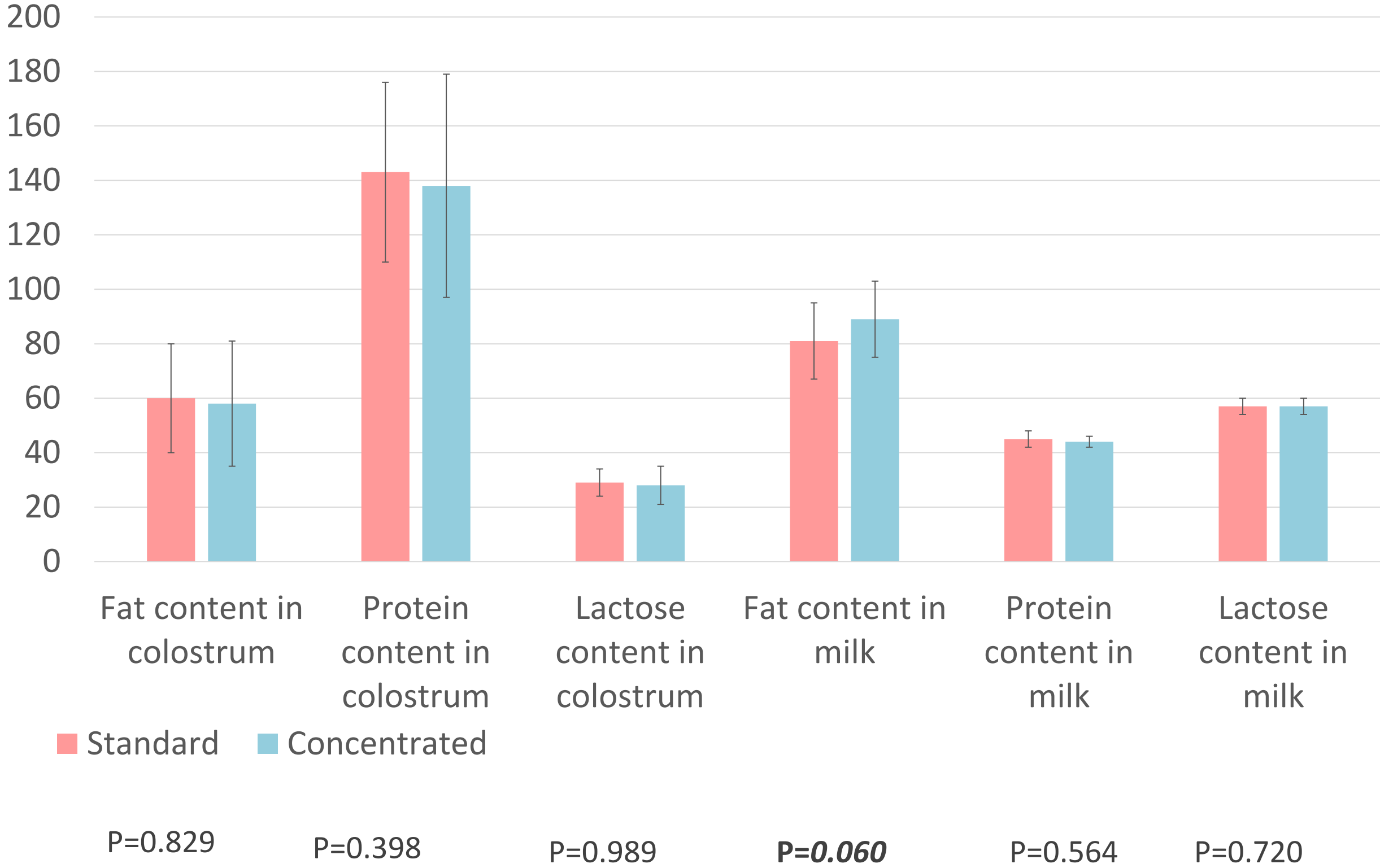


Caliper





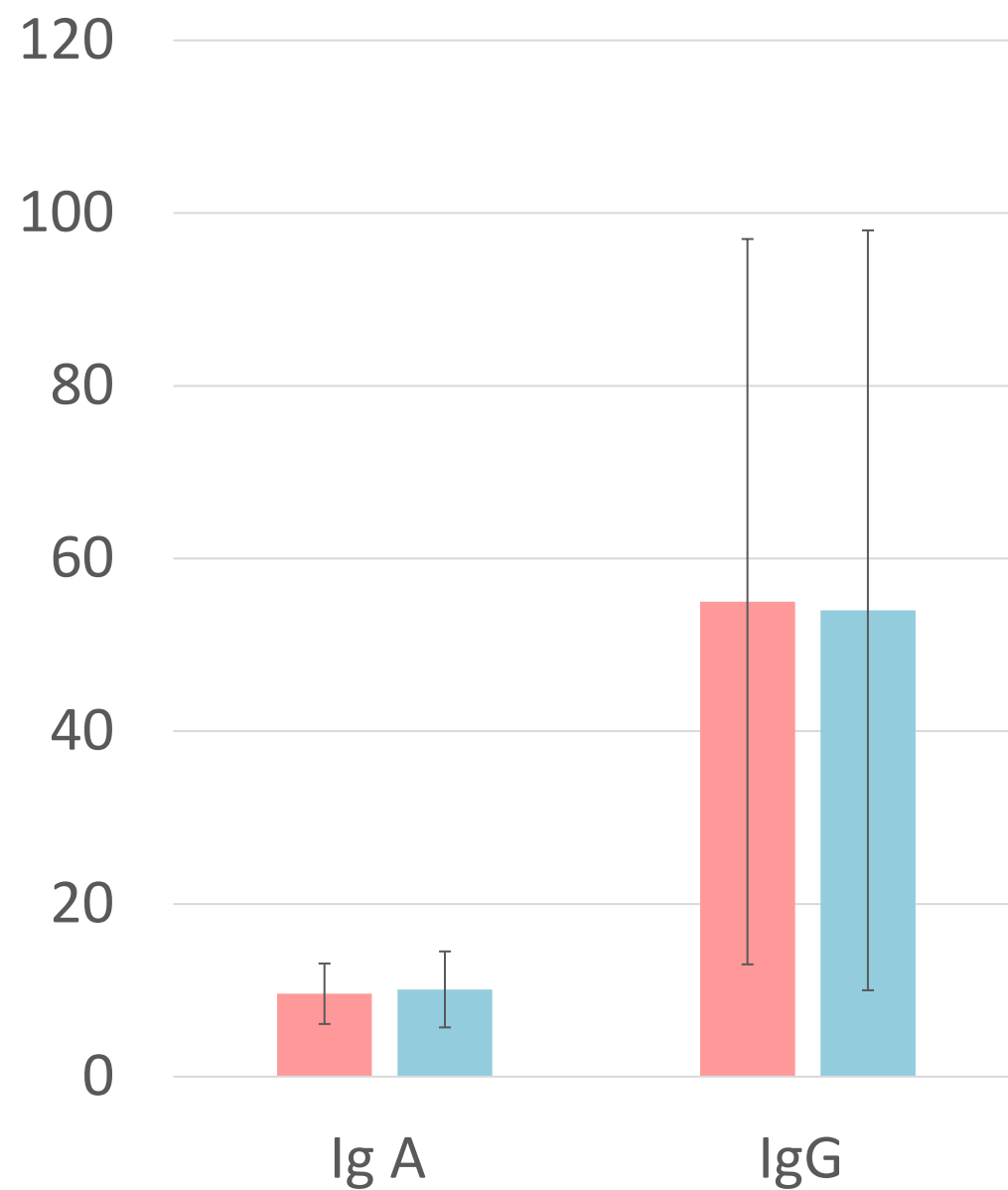
Colostrum and milk composition, g/kg



■ Tendency to higher fat content on concentrated diet



Ig in colostrum, g/l

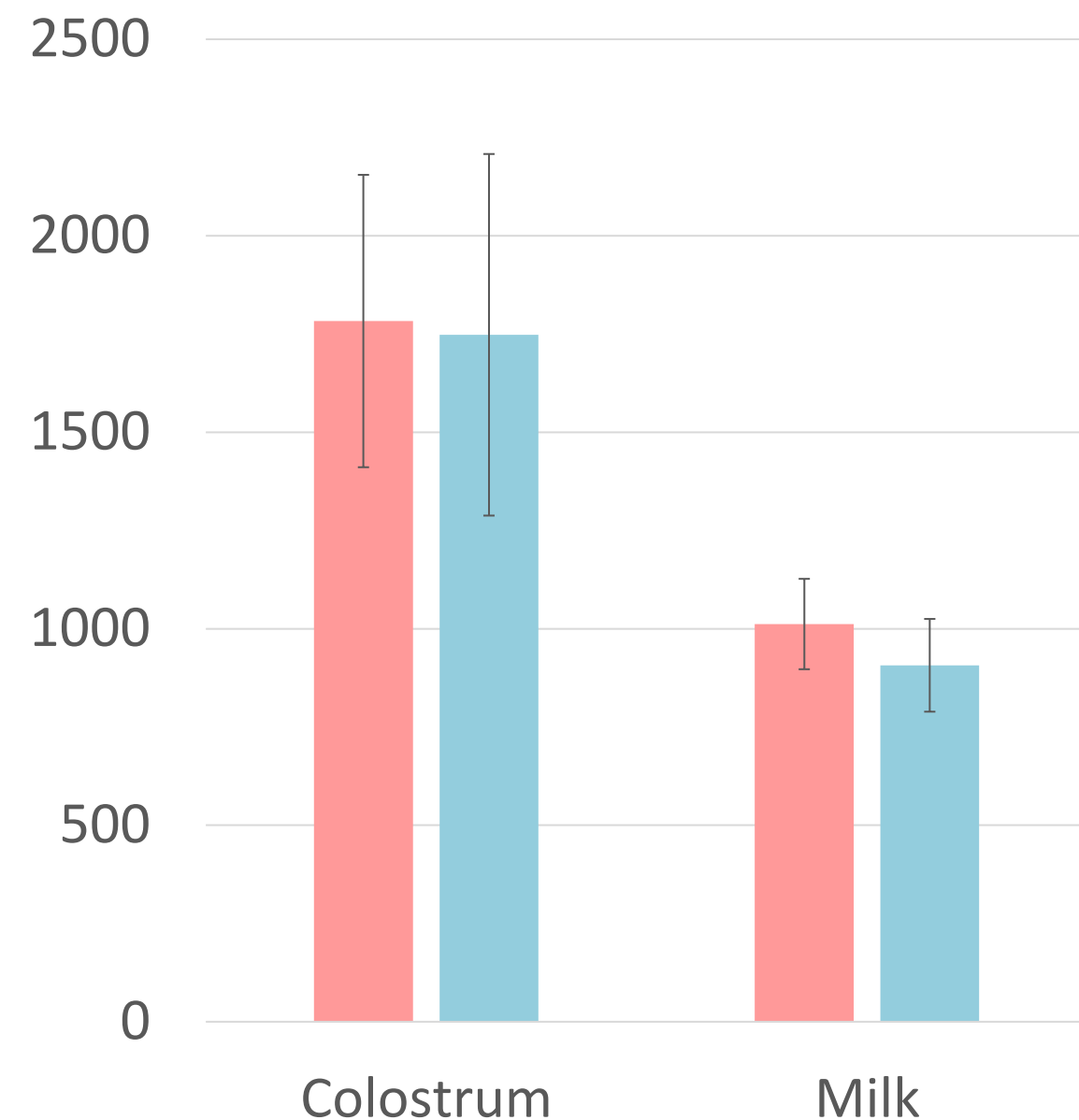


Standard Concentrated

P=0.539

P=0.866

Urea content in colostrum and milk, mg/l

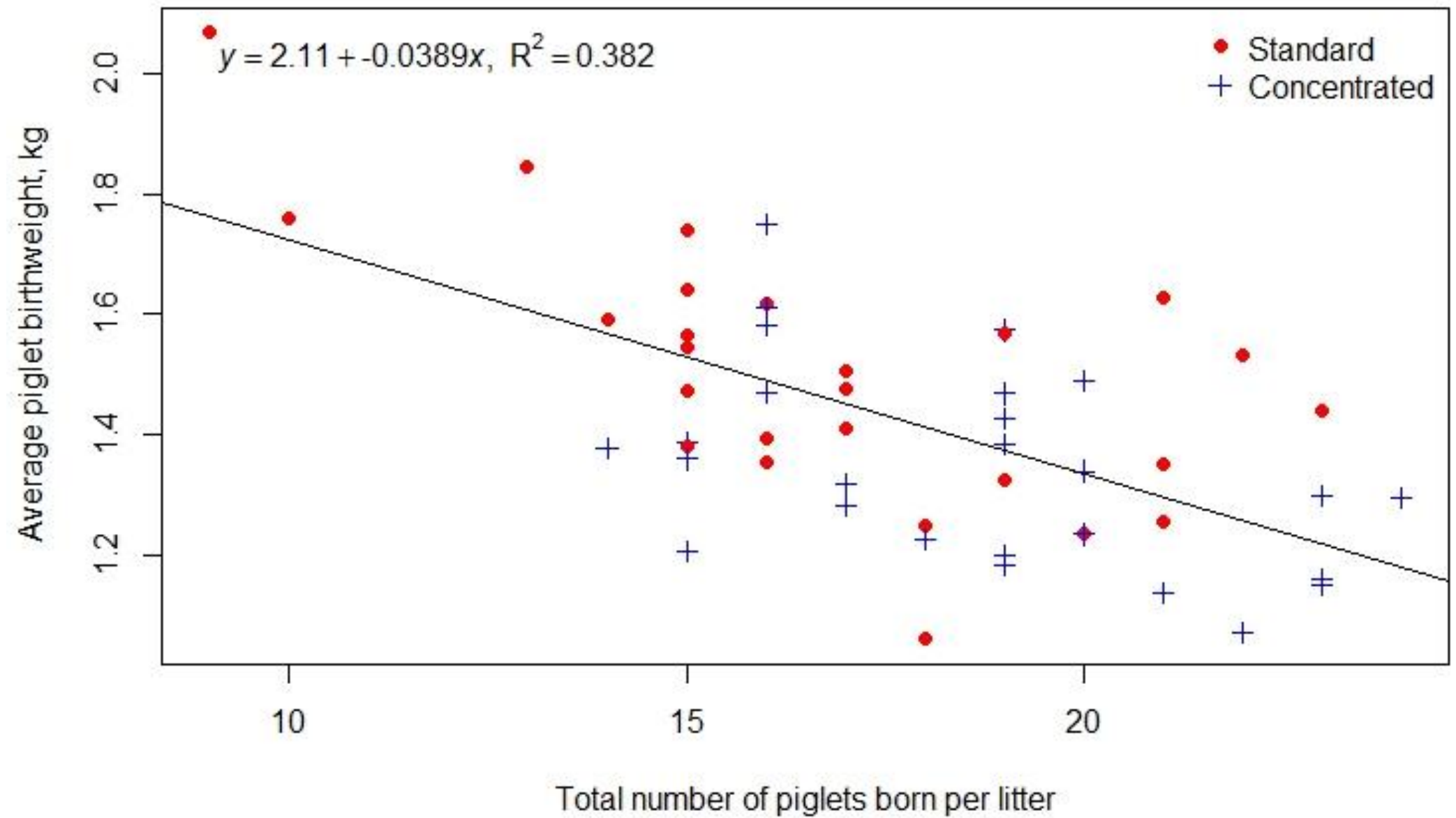


Standard Concentrated

P=0.474

P=0.010

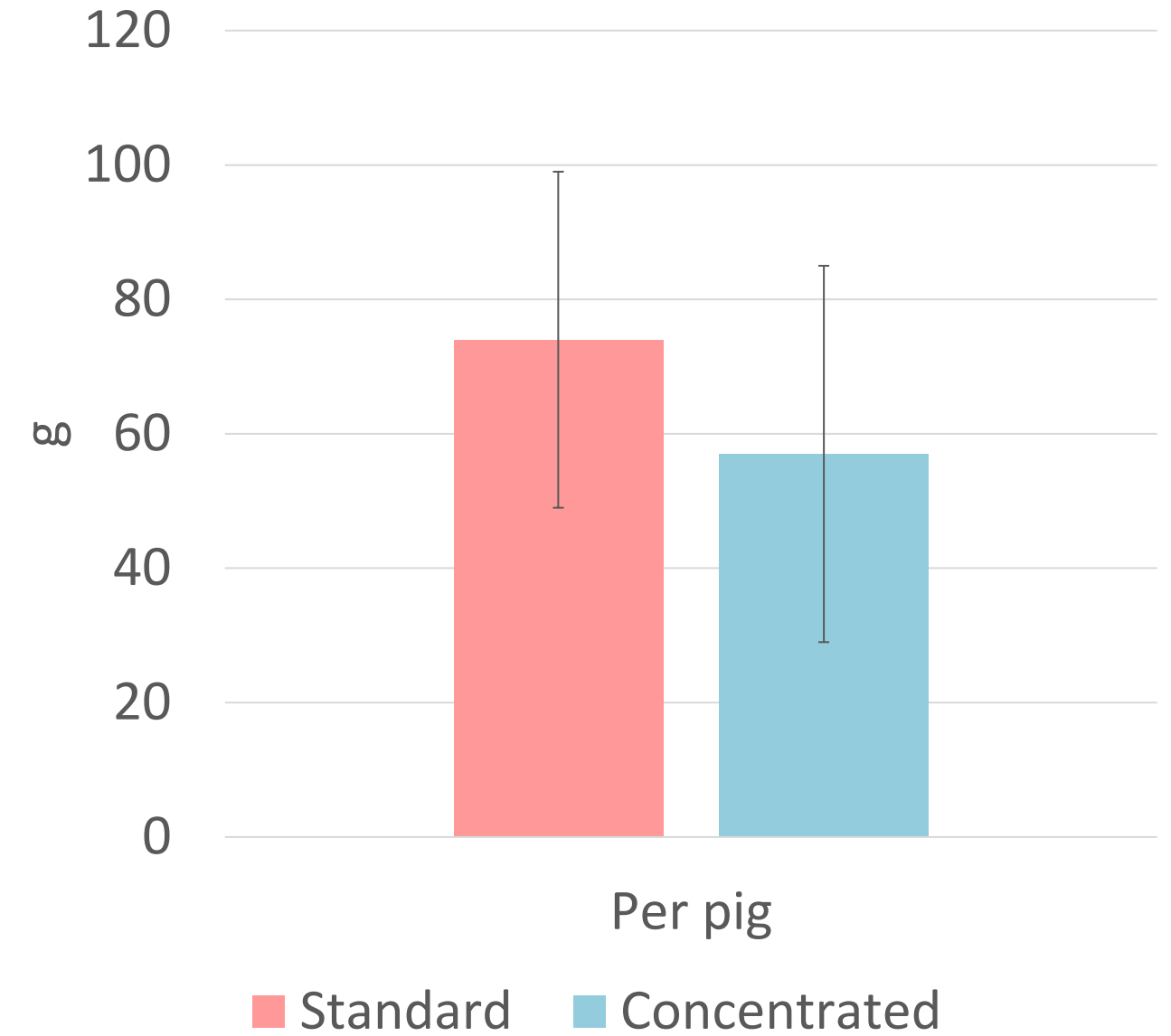
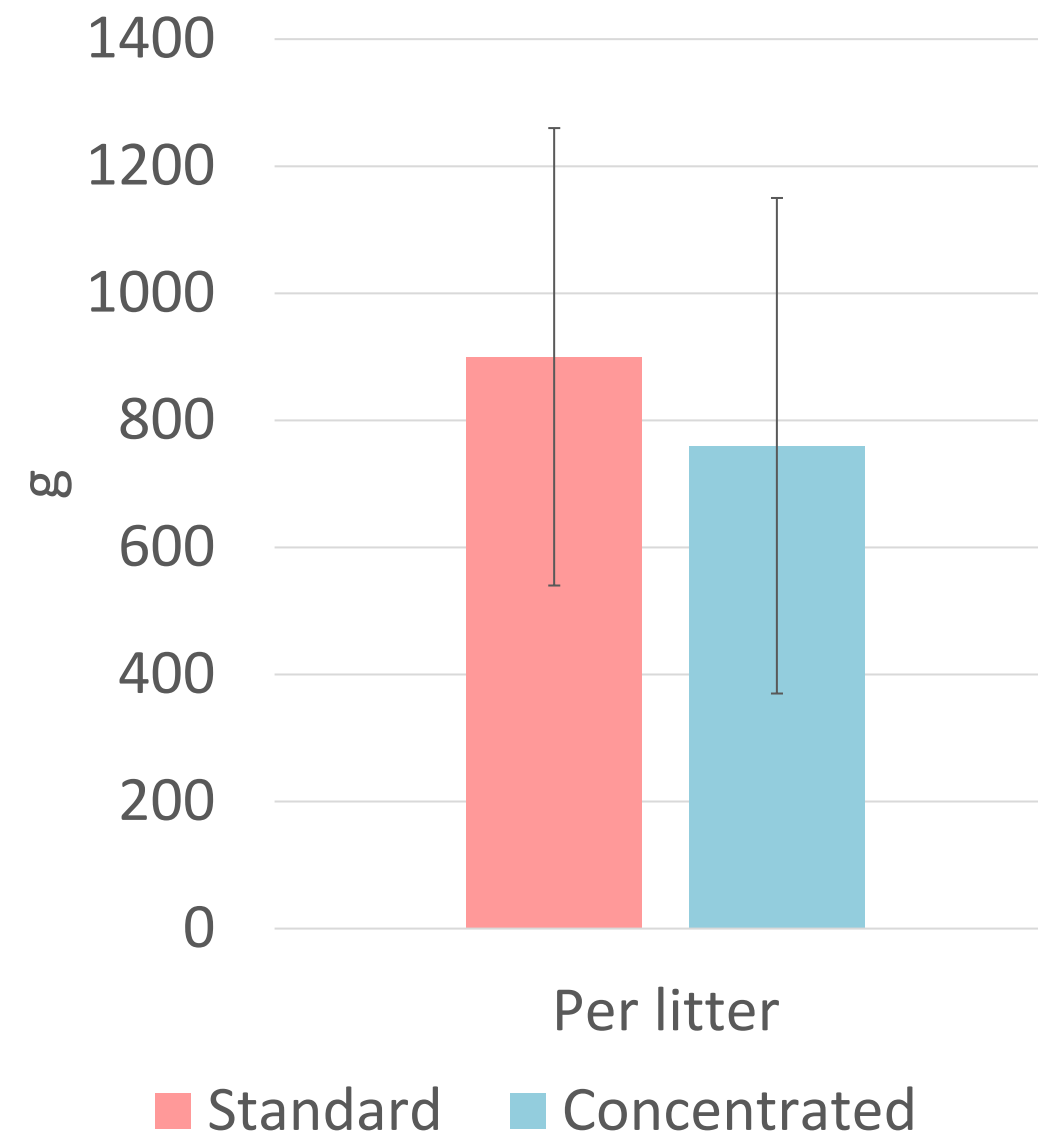
■ Lower milk urea level on concentrated diet



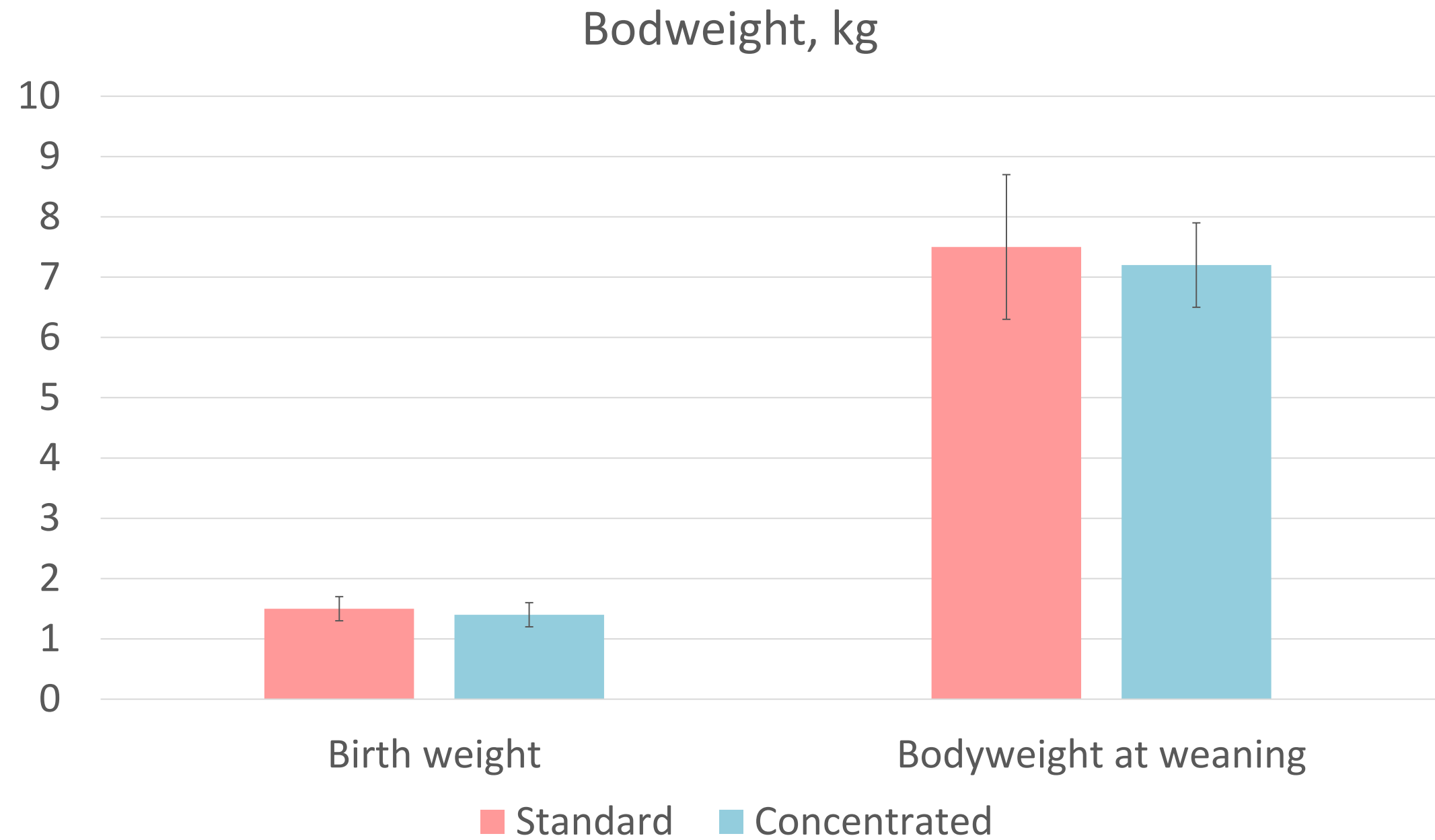
- More piglets on concentrated diet (P=0.019)
- When corrected for number of piglets: tendency to lighter piglets on concentrated diet (P=0.056)



Creep feed intake (d7- weaning)

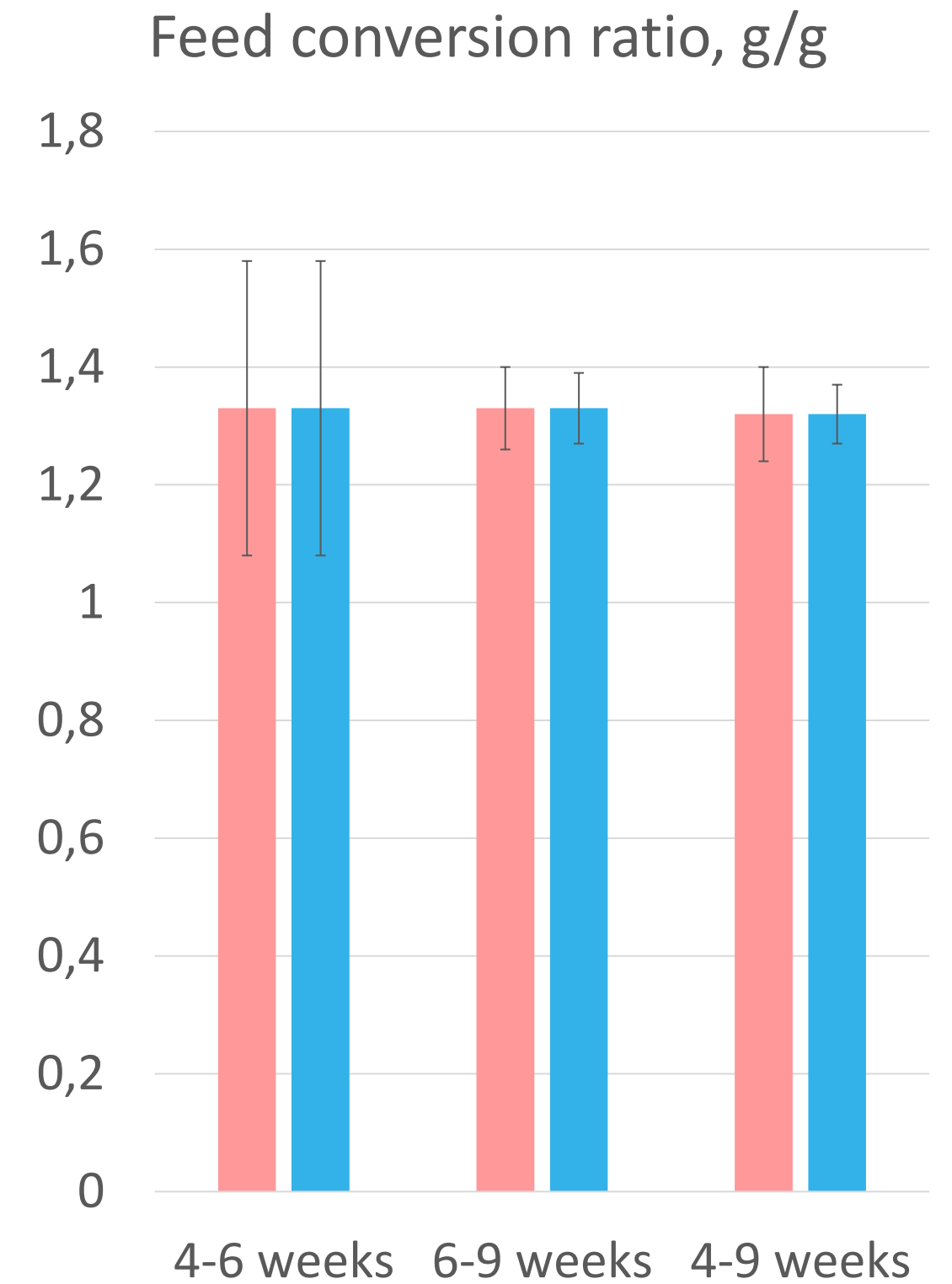
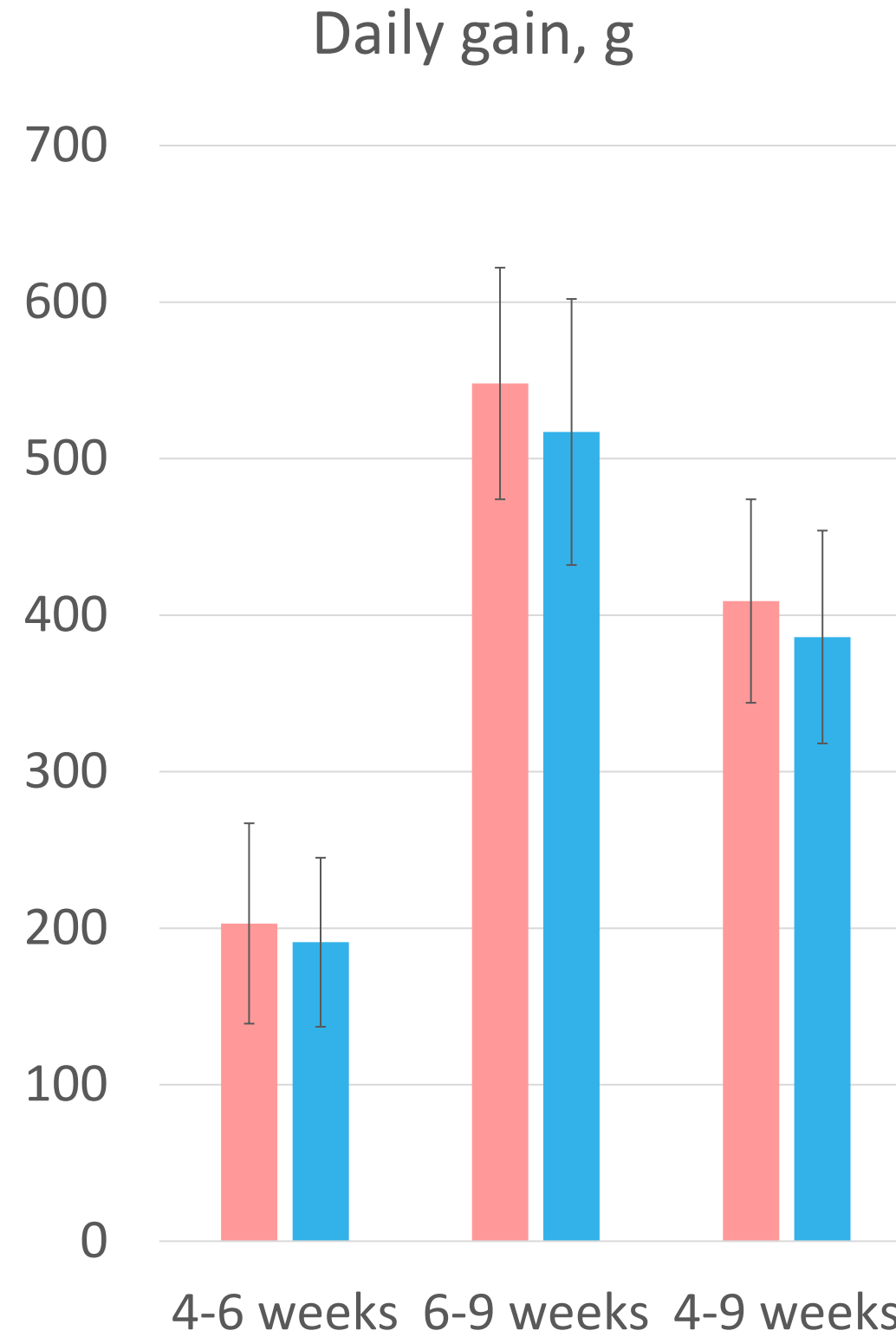
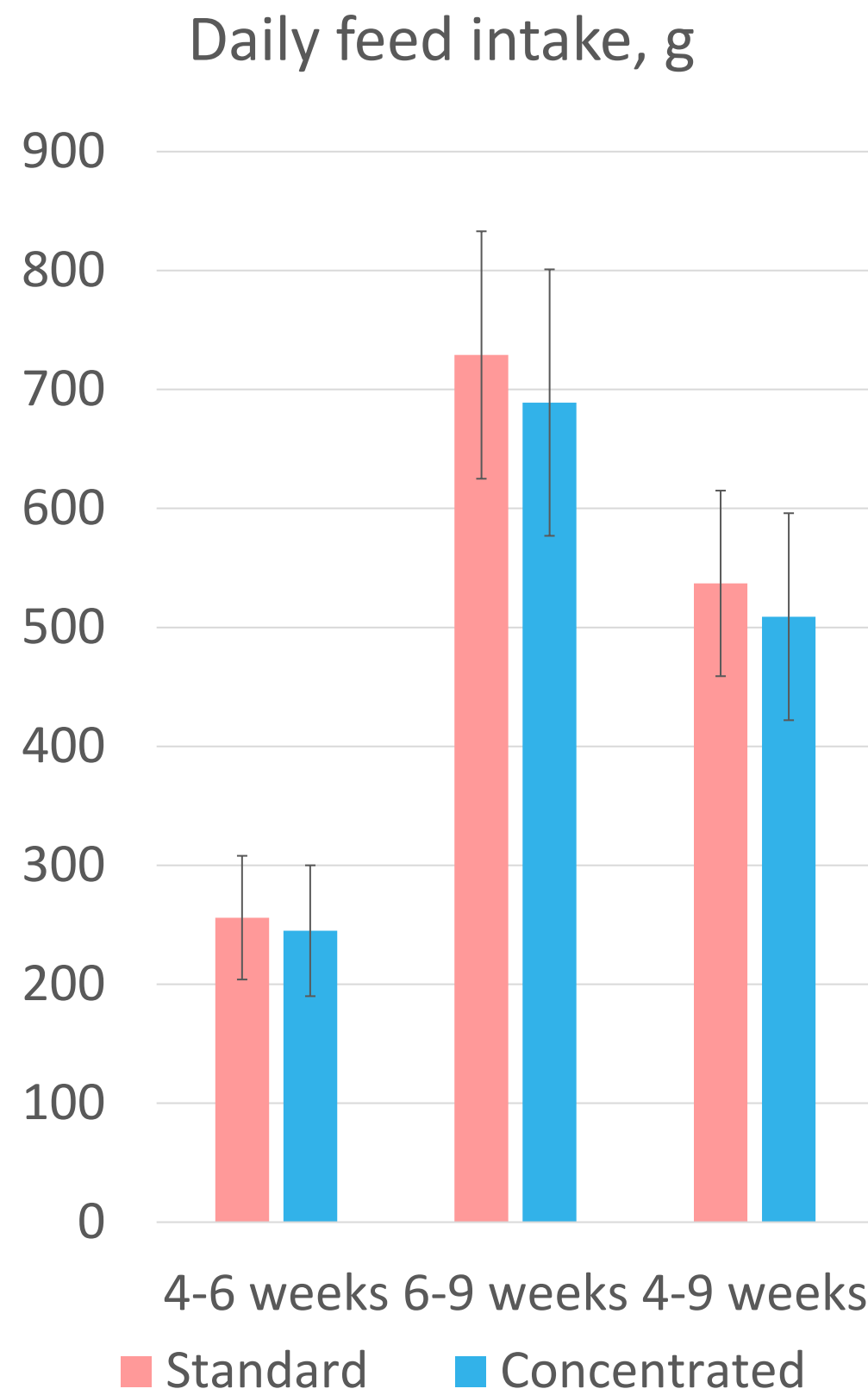


- Higher creep feed intake per litter ($P=0.013$) and per piglet ($P=0.013$) on the standard diet

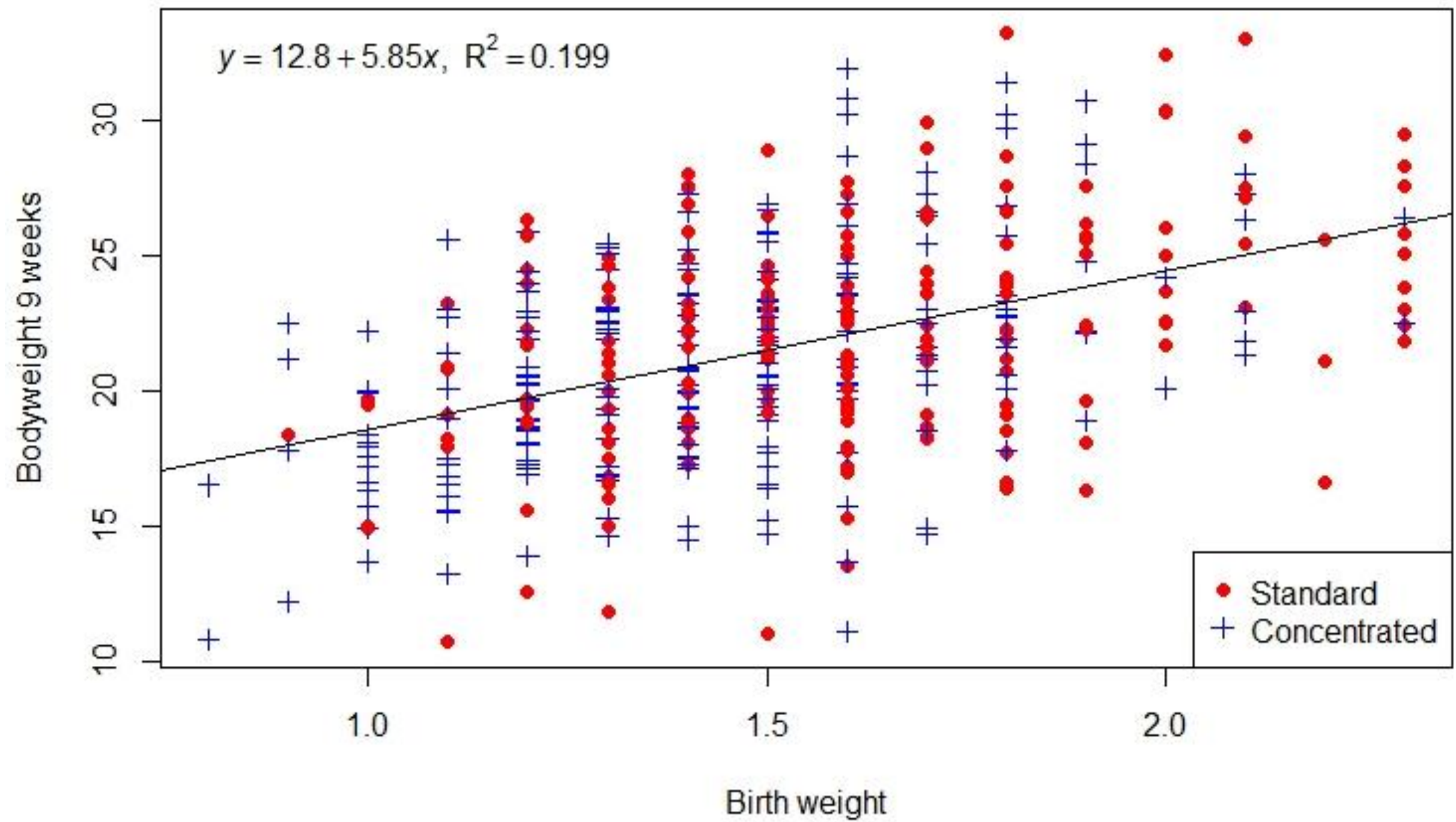


- Tendency to higher BW at birth (0.056), not at weaning (P=0.502) on the standard diet

Performance in nursery



■ Higher feed intake ($P=0.043$) and gain ($P= 0.049$) in piglets from the “standard” sows



Significant higher BW on “standard” diet



Conclusion

No clear beneficial effect of concentrated lactation diets on the sow's offspring

Thanks!

Questions?

A photograph of a yellow plastic sign leaning against a grey wall. The sign has three circular holes at the top and the word "BIGGEN" written on it in black marker. A yellow broom with a silver handle is leaning against the wall next to the sign. The floor is made of light-colored tiles.

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