Claw lesions of piglets kept in different farrowing environments

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Introduction

Farrowing environments have to fulfill both the biological needs of sows and piglets and to meet the farmer's requirements. As a result, designing a suitable farrowing environment is a continuing challenge. Apart from space allowance the floor conditions in the farrowing system have a huge impact on health & welfare of the animals. Suckling piglets are highly susceptible to injuries caused by inadequate flooring. Different commercial farrowing systems were tested with regard to the prevalence of claw lesions of piglets.

Animals, Materials and Methods

Data collection in a commercial sow unit of 600 sows (LW x LR). Batch farrowing in a 4 weeks cycle. Lactating sows and piglets were kept in four crate systems (C1 - C4) and 3 free farrowing pens (F1 - F3):

Sys	Pen	Floor piglet area	Floor heat pad	Floor sow area
C1	Crate, 4.1m², void ratio 32%	Plastic slats	Solid concrete	Slatted steel + solid metal chequer plate
C2	Crate 4.1m², void ratio 22%	Plastic-coated expanded metal slats	Solid concrete floor	Cast-iron slats
C3	Crate, 4.1m², void ratio 23%	Plastic slats with rubber mat	Solid plastic plate	Plastic slats with rubber mat + solid rubber mat
C4	Crate, 4.2m², void ratio 28%	Plastic-coated expanded metal slats	Solid metal plates	Slatted steel + solid metal chequer plate
F1	Free farrowing pen, 7.6m², void ratio 14%	Solid concrete + cast iron slats	Solid concrete plate	See piglet area
F2	Free farrowing pen, 4.9m², void ratio 28%	Cast-iron slats + plastic slats	Solid plastic plate	See piglet area
F3	Free farrowing pen, 4.2m², void ratio 28%	Cast-iron slats + plastic slats	Solid plastic plate	See piglet area

84 litters were inspected for claw lesions twice:
I: n= 885 piglets, 5.4 d ±1.3 of age; **II**: n= 814 piglets; 18.7 d ±1.8 of age.
Lesions were classified by a veterinarian for type, location and severity.
Litterwise analysis of severe lesions by PROC GLM_mult, Tukey, PROC GLM_rep (p=0.05)

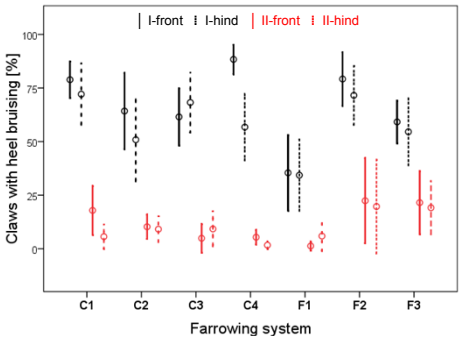

Newborn piglet on slatted floor

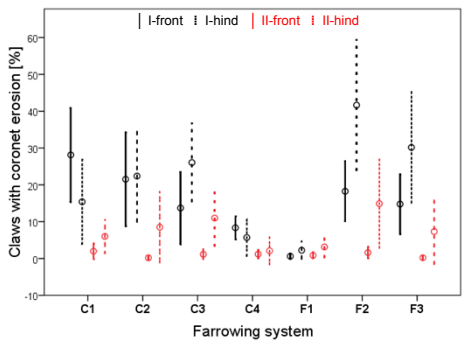

Coronet erosion dorsal


Heel bruising

Results

- 90 % with heel bruising at I → 36 % at II
- 34 % with coronet erosion at I →2 % at II
- Hind limbs more affected than front limbs





- Effect of system on claw lesions (I: p<0.001; F=1.826; II: p=0.002; F=1.60)
- F1 < F2, F3, C1-C4 in most measures
- Prevalence of claw lesions not primarily affected by crate vs. non-crate
- Solid < oval openings < slots ; slatted steel with V-shaped bars worst

Tab.: Proportion of claws with lesions at inspection I by environmental factors. LS Means in %.

Lesion	*n*	Heel erosion		Heel bruising		Coronet eros.		Access. digit	
Limb		*front*	*hind*	*front*	*hind*	*front*	*hind*	*front*	*hind*
System class		*p<0.001; df1=30; df2=136; F=2.83*							
Crate	*48*	9.7 ^{b}	17.1 ^{b}	73.2 ^{b}	62.0 ^{b}	17.9 ^{b}	17.4 ^{a}	3.0	16.4
Free pen small	*24*	5.7 ^{b}	19.3 ^{b}	69.7 ^{b}	63.1 ^{b}	16.5 ^{b}	35.9 ^{b}	4.0	26.5
Free pen big	*12*	1.3 ^{a}	1.9 ^{a}	35.4 ^{a}	34.3 ^{a}	0.6 ^{a}	2.2 ^{a}	5.3	29.1
Floor piglet area		*p<0.001; df1=30; df2=136; F=2.91*							
Slots	*48*	8.4	21.5 ^{b}	69.7 ^{b}	66.6 ^{b}	18.7 ^{b}	28.3 ^{b}	3.7	22.8 ^{ab}
Oval openings	*24*	8.3	10.4 ^{ab}	76.3 ^{b}	53.8 ^{ab}	14.9 ^{b}	14.0 ^{a}	2.6	13.6 ^{a}
Solid	*12*	1.3	1.9 ^{a}	35.4 ^{a}	34.3 ^{a}	0.6 ^{a}	2.2 ^{a}	5.3	29.1 ^{b}
Floor heat pad		*p<0.001; df1=30; df2=136; F=3.75*							
Concrete	*36*	8.7	15.6	59.5 ^{a}	52.4	16.8	13.3 ^{a}	4.4	21.7
Plastic	*36*	4.0	17.8	66.6 ^{a}	64.9	15.6	32.6 ^{b}	3.2	22.6
Metal	*12*	13.5	8.6	88.3 ^{b}	56.8	8.4	5.7 ^{a}	2.6	14.6
Floor sow area		*p<0.001; df1=60; df2=272; F=2.39*							
Plastic	*12*	5.7 ^{a}	19.3	69.2 ^{bc}	63.1 ^{b}	16.5 ^{b}	35.9 ^{c}	4.0	26.5
V-steel bars	*24*	17.5 ^{b}	20.7	83.6 ^{c}	64.4 ^{b}	18.2 ^{b}	10.5 ^{ab}	3.8	18.9
Cast iron	*24*	3.2 ^{a}	12.2	64.2 ^{bc}	50.9 ^{ab}	21.5 ^{b}	22.4 ^{ab}	2.7	12.7
Rubber mat	*12*	0.6 ^{a}	14.8	61.5 ^{b}	68.2 ^{b}	13.7 ^{ab}	26.0 ^{bc}	1.6	14.9
Concrete	*12*	1.3 ^{a}	1.9	35.4 ^{a}	34.3 ^{a}	0.6 ^{a}	2.2 ^{a}	5.3	29.1

^{abc} Different letters within a column section indicate a significant difference (p<0.05)

Discussion & Conclusion

The prevalence of claw lesions in suckling piglets is (too) high especially in the first week of life. Farrowing environments with solid floor and straw litter would improve the situation but abrasiveness of concrete to carpal joints must be taken into account.

The quality of slatted floor elements for farrowing systems has to be improved with special emphasis to health and welfare of suckling piglets both in crated and in free farrowing systems.

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