

HOUSING DESIGN IMPACTS ON LAMENESS AND LONGEVITY

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- With the variety of pen designs, feeding systems, mixing strategies etc used for group housing of sows – difficult to conduct comparisons especially for lameness

Housing Components impacting lameness

One or more contributing factors – alone or in combination

- Flooring
- Cleanliness/sanitation
- Space allowance
- Layout
- Feeder/feeding system design
- Availability & components of recovery pen
- Management
- ?


Flooring

- Slatted flooring
 - Total slatted vs partial slatted
 - Ratio Slat:gap
 - Orientation of slats – ease of movement
 - Slat width




- Abrasiveness → lesions
- Slipperiness
- Drainage & cleanliness

- Compressibility (e.g. straw, rubber mats)



Flooring Comparisons - University of Manitoba GRS/NCLE Gestation Housing



21.3% of sows culled for physical issues in CONV (partially slatted) compared to 6.7% in ALT (straw over concrete). (Fynn et al 2010)

Sows culled in first 3 parities

	Alternative	Conventional	TOTAL
Productivity	12 (7.24)	3 (7.76)	15
Physical	2 (6.76)	12 (7.24)	14
TOTAL	14	15	29

Higher involuntary culling in Conventional (partially slatted floors)

The incidence of lame and non-lame sows in straw-bedded and concrete part-slatted ESF housing systems over one gestation.

Straw-bedded ESF	Not lame	Lame	Total
Frequency	99	41	140
Percent (%)	35.7	14.8	50.5
Part-slatted ESF	Not lame	Lame	Total
Frequency	78	59	137
Percent (%)	28.2	21.3	49.5
Total (frequency)	177	100	277
Total (%)	63.9	36.1	100

■ Positive correlation between severity of body injury score and lameness on partially slatted floor

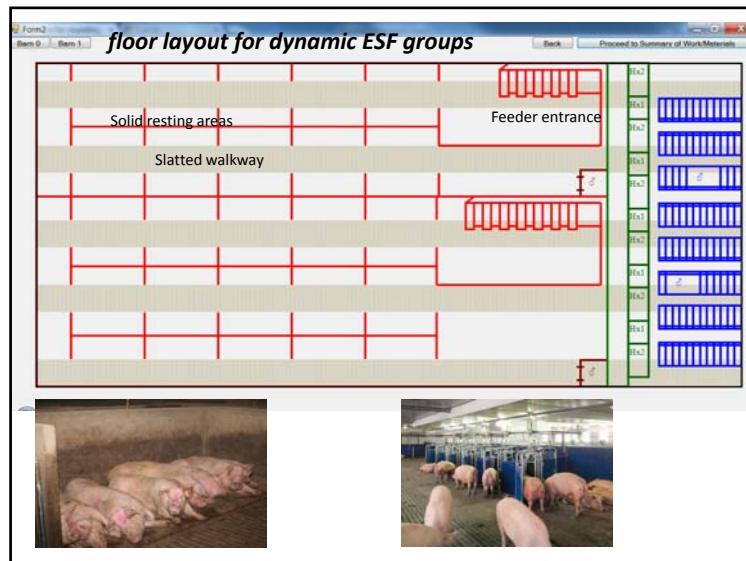
Proportion of lame sows and cleanliness scores in 4 group-housed sow herds in Ontario (adapted from Zurbigg & Blackwell, 2006)

Herd	Mean Group Size	Space (m ²)	Mixing (weeks bred)	Feeding	% Slatted floor	% Lame	Cleanliness: Only hooves soiled	Cleanliness: Hooves & 20% of legs & body soiled
A	25	2.4	2-3	Floor	38	7.3	68.9	25.2
B	24	1.8	6-8	Floor	16	12.3	10.8	47.2
C	11	2.9	0-1	Floor	0	2.8	88.3	9.6
D	58	1.9	2-3	ESF	100	22.9*	45	40

* 4.9% were unable to rise or walk without assistance

Layout of group pen space

- Allow avoidance, escape, ease of movement, access to defined feeding, resting, dunging areas
- Space dividers
- Resting areas – ease of lying down and getting up



Feeder/Feeding System

- Competitive vs Non-competitive
- Placement of feeder (e.g. ESF in pen)
- ESF – type and exit/entry locations
- Level of aggression, interaction and avoidance behaviour





Recovery Pens

- Adequate space
- Flooring – partial solid, compressible



Rubber slatted mats (Calderon Diaz, 2013)

Management – key in any system

- Grouping – dynamic vs static
- Mixing strategy – timing and method to minimize fighting and physical interactions that can lead to injuries
 - ▣ Mix at weaning,
 - ▣ 0-4d post-breeding
 - ▣ 28-35 d post-breeding/confirmed pregnant
- Ability/facility to segregate individual if needed

Housing concepts for soundness and longevity ?

- **Ability to attend to the individual.**
- **Concepts very important:**
 - Group size and dynamics.
 - Space allocation and shape.
 - Methods of sow introduction/mixing
 - Timing of sow introductions.
 - Flooring – particularly slat and gap widths
 - Space divisions/mixing pens.
 - Space to segregate individual if necessary.
- **Stockpeople ****
 - knowledgeable
 - positive attitude
 - observant



