



# Sow behaviour and welfare considerations in the design of group housing systems

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# The modern sow

- ❖ Larger size ➡ mechanical problems
- ❖ Lower body fat ➡ –ve assoc. between leanness & longevity
- ❖ Larger litter sizes ➡ Greater ‘drain’ on the sows reserves

**The modern sow is a genetically improved but increasingly ‘fragile’ animal**

- ❖ Continuing decline in longevity

High levels of unplanned removal of young sows

**An important factor contributing to declining sow longevity is the intensification of production systems in the absence of efforts to understand and meet the needs of the genetically improved sow**

## Group housing (GH)

Unique opportunity to better meet the needs of the genetically improved sow

- ❖ As more of a sows needs are met welfare ↑
- ❖ Health ↑, performance ↑ and productive lifetime ↑
- ❖ Higher potential for good welfare in good GH
  - Sows can exercise, socialise, control their thermal environment etc.
- ❖ Higher potential for *very poor sow welfare* in badly designed GH
  - Meet even fewer of the sows needs than stalls and unplanned removal and mortality rates ↑

**Wrong/bad decisions made now could have detrimental implications for the future productivity and longevity of the national sow herd**



# Why is there a risk of making poor decisions regarding GH?

- ❖ Financial constraints
- ❖ Limited time to devote to sows
- ❖ Short term focus

Desire for fastest, cheapest and simplest solution!

In this scenario it will be challenging to achieve a sustainable GH system offering good standards of sow welfare.....

- ❖ Limited knowledge of the sows needs in group systems
- ❖ Focus on indicators related to sow performance rather than on those related to sow health and longevity
- ❖ Lameness not reflected in sow performance figures



**These problems could become even more common when we switch to GH.....**





# Why?

- ❖ Claw and joint lesions similar in GH and stalls but more likely to lead to lameness in GH
- ❖ Little or no bedding will be used: more culling for lameness in such systems
- ❖ Fully slatted flooring: major risk factor for lameness
- ❖ Not all slats are not equal: the wider the better

**Features of the housing environment that ensure high sow welfare standards will also ensure less lameness and associated problems (e.g. poor longevity)**

# Lameness unlikely to be reflected in sow performance figures!

- ❖ Lameness is major reason for culling and death in sows (young sows particularly vulnerable)
- ❖ Major driver of high replacement rates
- ❖ Low replacement rates are integral to profitability
- ❖ Highest annual production achieved when old age is main reason for sow removal
- ❖ Evaluate these indicators in addition to output/sow etc.



## Sows in free-living groups.....



- ❖ Small group size
- ❖ Unfamiliar animals never allowed in
- ❖ Stable dominance hierarchy (DH)
- ❖ DH maintained by subordinates avoiding dominants rather than aggression
- ❖ Synchronised behaviour
- ❖ Maintain functionally distinct zones (nest for sleeping etc.)

# GH system design features associated with good sow welfare standards

- ❖ Small group size?
- ❖ Minimal remixing
- ❖ Adequate space so subordinate sows can avoid dominants (10-12m flight distance)
- ❖ Synchronised feeding
- ❖ Protection for sows during feeding
- ❖ Functionally distinct zones
- ❖ Solid areas to facilitate provision of bedding etc.
- ❖ (High fibre diet/foraging substrates)

*Adapted from The Welfare of Pigs [2009] edited by J. Marchant-Forde and Brooks (2003)*

# Benefits associated with functionally distinct zones

- ❖ Facilitates uninterrupted, calm resting by sows
- ❖ Facilitates natural excretory habits i.e. clean sows!
- ❖ Sows can control their thermal environment
- ❖ Provides sows with more divisions to lie against/visual barriers etc.







**Contrast this system...**







# Long trough system

- ❖ Sows unprotected at feeding
- ❖ Group size >5 so  $2.25\text{m}^2/\text{sow}$  = Minimal shared space
- ❖ No possibility for young/injured/thin sows to protect themselves/avoid dominants/escape from fights
- ❖ No solid flooring so difficult to use bedding/mats, provide foraging material
- ❖ No functionally distinct areas: entire pen can potentially be used for lying or as a toilet
  - Dirty sows, disturbed lying, slippery in front of trough etc.
- ❖ Difficult to meet requirements for environmental enrichment

# Long trough system

- ❖ Small group *Outweighed by low amount of shared space*
- ❖ Sows can feed together *Outweighed by fighting for access to feed*



# Compromises?

## ❖ Specialised mixing pens

- Round or rectangular
- Flight distances of 10-12m
- Hide areas/visual barriers
- Solid floor with bedding

## ❖ Provide more space to sows in small groups?

# Electronic Sow Feeder (ESF) systems

- ❖ Group composition constantly changing:
  - ➡ unstable dominance hierarchy = chronic stress
- ❖ Large group size *but* sows can adapt by forming sub groups
- ❖ Sows cannot feed together *but*
  - sows can be fed as individuals and are protected during feeding
  - can adopt an individual and flexible feeding pattern

# Electronic Sow Feeder (ESF) systems

- ❖ Large amount of shared space (even though only 2.025m<sup>2</sup>/sow as group size >40)
- ❖ Functionally distinct zones
- ❖ Lots of surfaces to lie against and places to escape/hide from aggression
- ❖ Possibilities to provide bedding/foraging material / environmental enrichment



# Conclusions

- ❖ Switch to group housing represents an opportunity to better meet the needs of the genetically improved sow
- ❖ Lameness represents biggest threat
  - extent and impact on productivity & farm finances
  - associated pain and suffering
  - preventable and treatable
- ❖ GH design features associated with high welfare standards will ensure that lameness is minimised
- ❖ Better than minimal standards normally required
- ❖ Sustainable GH system in which sow health, productivity and longevity is maximised

Application of knowledge of behaviour and needs of sows in GH systems is integral to putting a sustainable, welfare friendly system in place in which sows will lead a healthy, long and productive life



# Thank You!

## ❖ Pig lameness survey

- Teagasc Moorepark & University of Warwick, UK
- Amy Quinn

