



Better Training for Safer Food Initiative

Training course on “Animal Welfare in pig production”

Group housing and feeding strategies for sows and gilts

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BTSF

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Consumers,
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- Demands placed on farmers
- Group size and space provision
- Provision of resources to minimise stress
 - **Types of feeding system**
 - **Design of feeding systems**
- Management of satiety
- **NOT** a comparison of gestation stalls versus group housing

Demands placed on farmers

Council Directive 2008/120/EC requires:

- Sows and gilts must be **kept in groups** from 4 weeks after service to one week before the expected farrowing date (holdings of <10 sows may use individual housing)
- **Minimum unobstructed floor area** allowance of 1.64m² (gilts) and 2.25m² (sows)
 - Group size <6 requires 10% more space/animal
 - Group size >40 may have 10% less space/animal

- All pigs must be fed at least once a day. Where pigs are housed in groups and not fed *ad libitum*, or by an automatic feeding system, **each pig must have access to the food at the same time** as the others in the group.
- Sows and gilts kept in groups must be fed using a system which ensures that **each individual can obtain sufficient food** even when competitors for the food are present
- Member States shall ensure that all dry pregnant sows and gilts, in order to satisfy their hunger and given the need to chew, are given a **sufficient quantity of bulky or high-fibre food** as well as high-energy food.

- Measures shall be taken to **minimise aggression** in groups.
- Member States shall ensure that pigs that have to be kept in groups, that are particularly aggressive, that have been attacked by other pigs or that are sick or injured **may temporarily be kept in individual pens.**



UK transition to group housing

Systems in use 2002:

Group housing of all dry sows became mandatory in UK in 1999

| | % of herds | % of sows |
|-----------------------------|------------|-----------|
| Outdoor | 12 | 23 |
| Group floor/trough fed | 38 | 30 |
| Cubicles/free access stalls | 12 | 8 |
| Individual feeders | 13 | 9 |
| Short stall feeders | 9 | 12 |
| ESF | 11 | 14 |

Major decisions centre around:

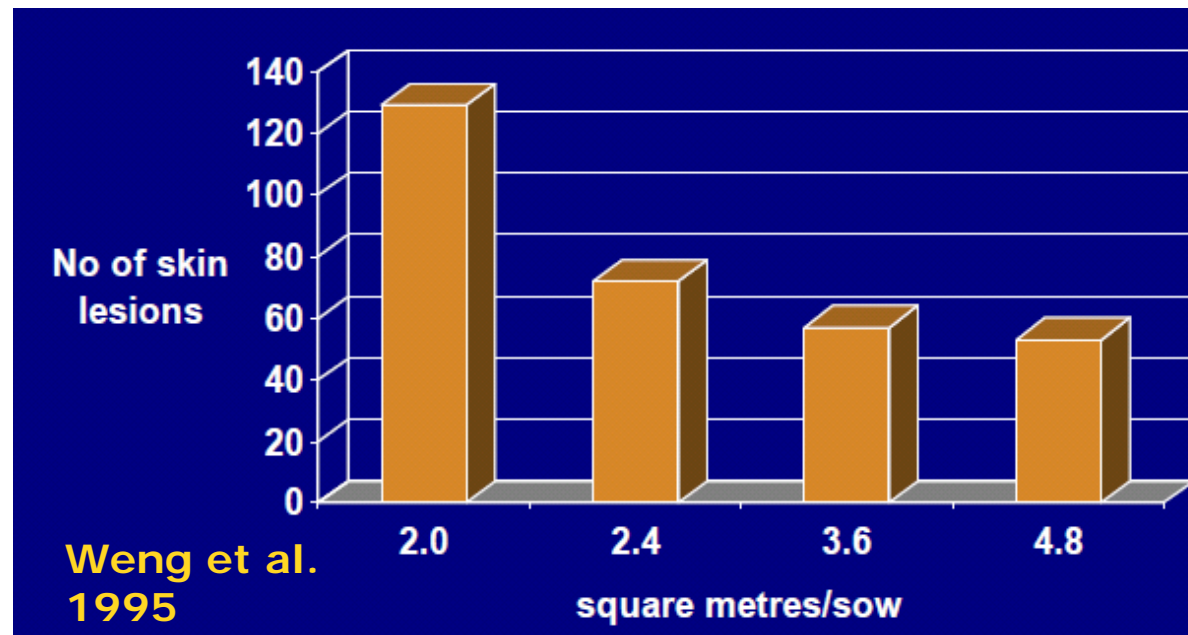
- Feeding system
- Floor type and bedding
- Space allowance and arrangement of space
- Group size and stability

Minimise competition for limited resources to reduce chronic stress

- Adequate floor space and appropriate group size
- Adequate resource provision
- Choice of feeding system
- Design of feeding system
- Management of satiety

Adequate floor space and appropriate group size

- Often confounded with feeding system in empirical studies
- General messages:
 - Increasing space reduces aggression and cortisol
 - Effect probably plateaus around legal minimum floor space



- We know too little about the effect of group size separate from the effect of feeding systems to understand how group size itself relates to stress in sows

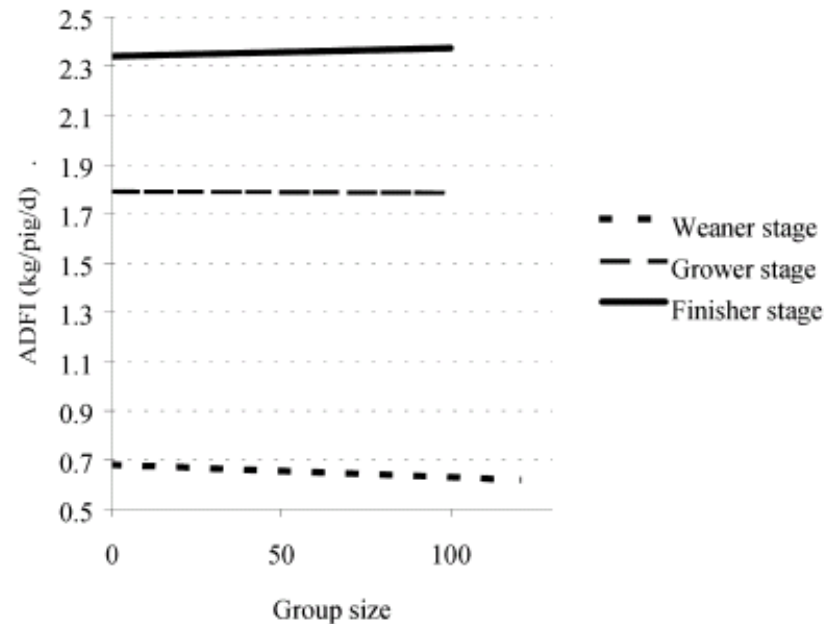
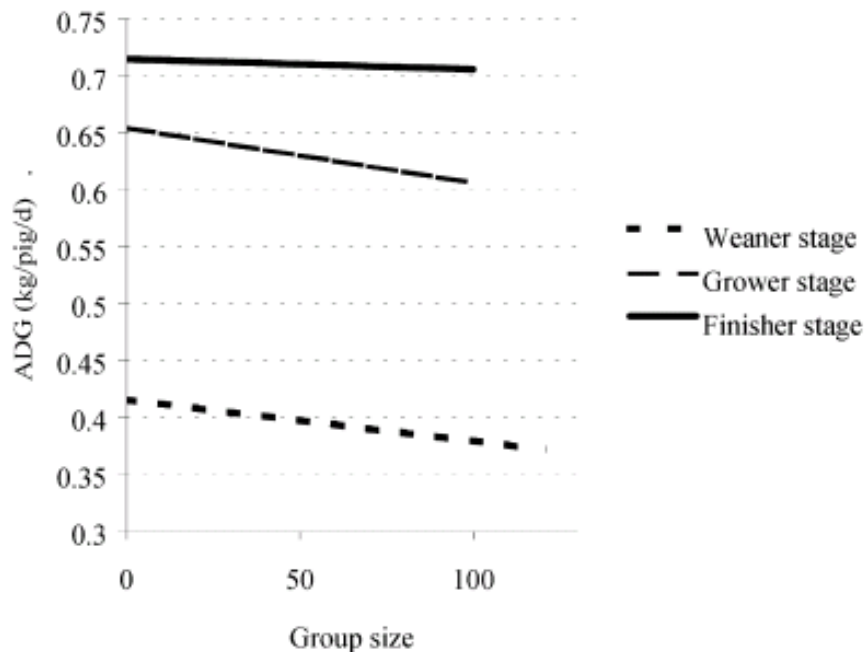
| | 5 | 10 | 20 | 40 |
|--------------|----|----|----|----|
| Skin lesions | 32 | 41 | 35 | 40 |

Taylor et al. 1997



- When floor space and feeder space per pig is constant, growth but not feed intake is depressed in large groups of young pigs
- No affect on lesions from aggression immediately after regrouping or in stable social groups

Turner et al. 2006: each line represents data from between 7 and 11 studies



Large groups

Advantages:

- More functional space
36% more functional unoccupied space in groups of 80 than 20 (McGlone and Newby 1994)
- Cheaper, more flexible housing
- Possibility for a sow to physically distance herself from an aggressor
- Labour saving e.g. for bedding and cleaning

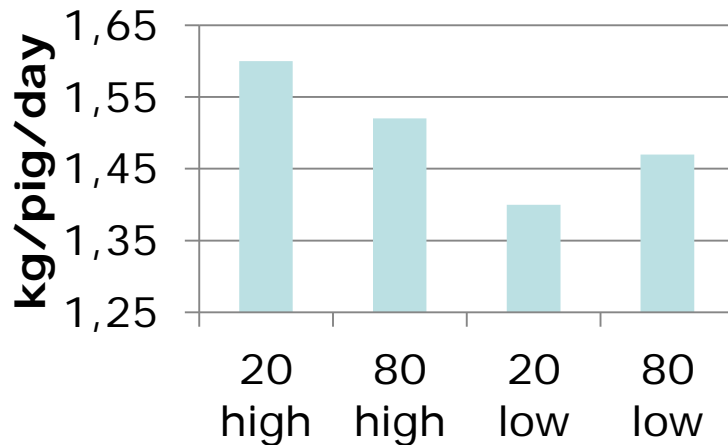
Disadvantages:

- Likely to have very large weight differences
- More difficult to inspect every sow properly
- Often dynamic groups
- Requires careful management of ventilation and zoning of pen

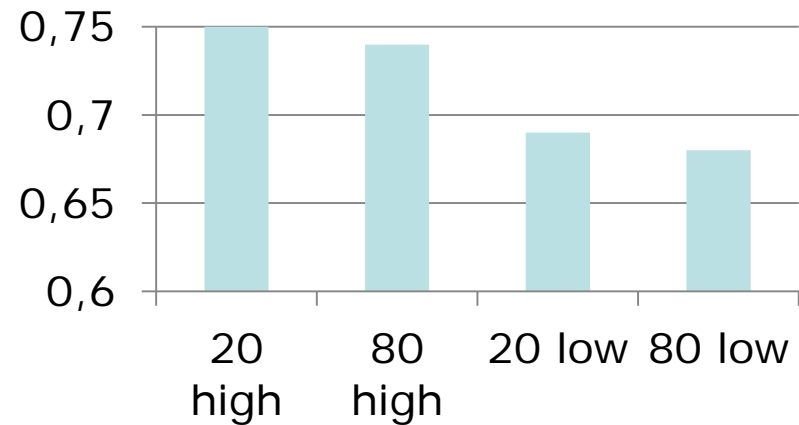
Large groups can work as well as small groups if managed well

Adequate resource provision

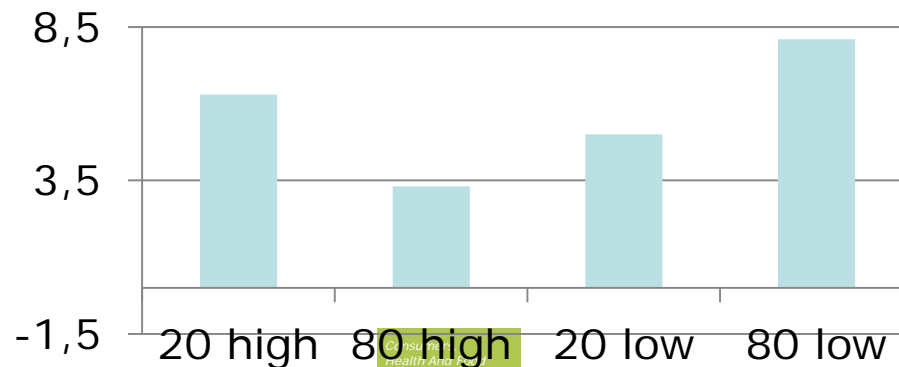
Average daily food intake



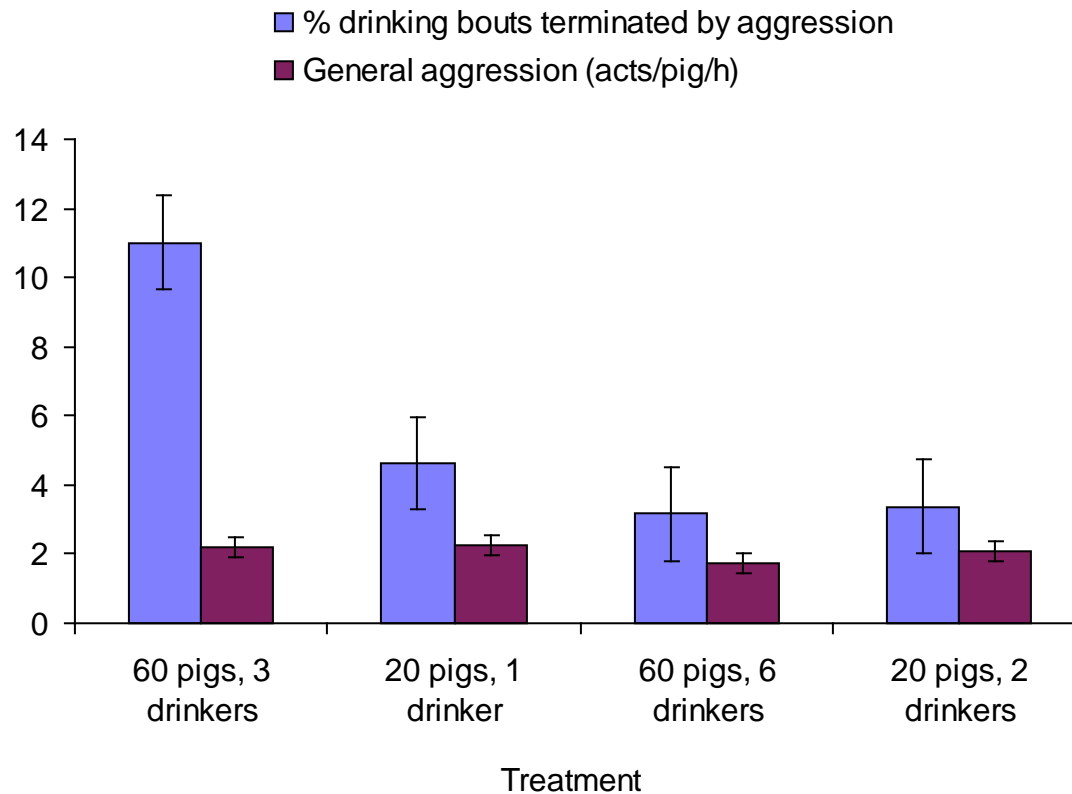
Average daily gain



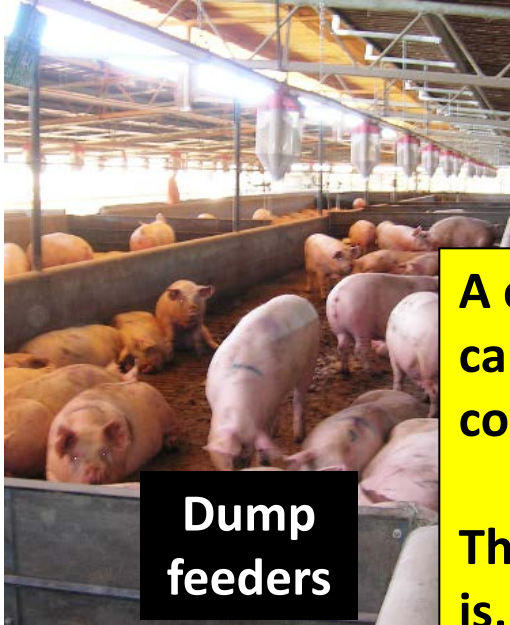
Skin lesion number 21 days post-mixing



- Drinker provision is also important



Choice of feeding system



**Dump
feeders**



**A compromise between
capital cost, labour cost and
costs of competition**

**The more defensible the feed
is, the more aggression that
will result**



**Trickle
feeders**



**Free-
access
partial
stalls**



**Full
length
lock-in
stalls**



ESF

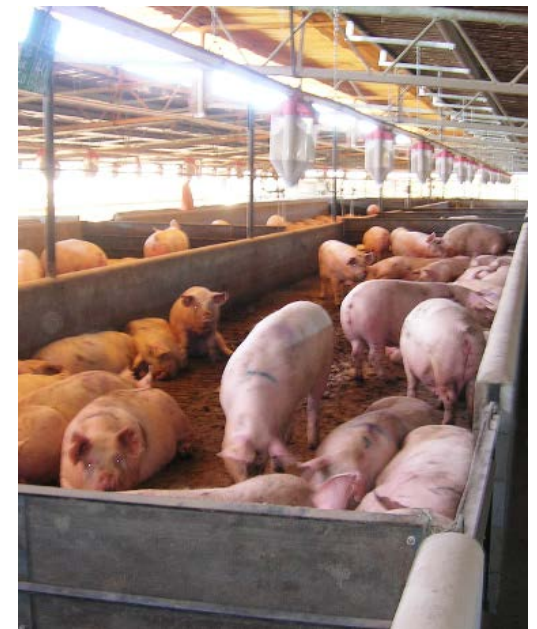
Floor feeding (dump or spin feeders)

Advantages:

- Simple, low cost

Disadvantages:

- Variability in feed access
- Aggression
- Feed wastage



Feed wastage with floor fed systems:

| | Group feeding | Individual feeding | ESF |
|---------------------|------------------|-----------------------|--------|
| No of herds | 42 | 58 | 18 |
| Pigs/sow/year | 21.2 | 22.0 | 21.2 |
| Feed use (t/s/y) | 1.35 | 1.26 | 1.27 |
| | | MLC | (1996) |

Individual manual lock-in feeding stalls

Advantages:

- Minimal aggression
- Precision feeding

Disadvantages:

- Space (typically 3.5-4.0m²/sow)
- Labour
- Capital cost
- Deterioration



Cubicles and free-access stalls

Advantages:

- Less labour than manual stalls

Disadvantages:

- Greater risk of bullying than manual stalls
- Less opportunity for precision feeding

Even sizing of pigs is more important

Partial stall systems (trickle or wet feeding)

Advantages:

- Very low space requirement (2.5-3.0 m²/sow)
- Wet feeding gives gut fill

Disadvantages

- Cost of feed delivery system
- Imprecise feeding
- Pen cleanliness when wet feeding
- Correct trickle rate when trickle feeding



Electronic sow feeders (ESF)

Advantages:

- Precise rationing
- Shared use by many sows (40-60)
- Flexible housing
- Low space requirement (2.5-3.0m²/sow)

Disadvantages

- Mechanical breakdown
- Competition
- Often dynamic groups



ESF require:

- Careful location and design
- Training sows + regular checking
- Regular maintenance

Estimated relative costs (capital costs for installation + running costs)

| System | Relative cost |
|---|---------------|
| Floor feeding | 100% |
| Manual stalls | 159% |
| Cubicles and free-access stalls | 144% |
| Partial stalls for wet or trickle feeding | 144% |
| ESF | 108% |

Feeding system design

- Attractive lying area
- Adequate exit corridor from ESFs
- Good zoning of pens and freedom from disturbance when
- Minimise opportunity for monopolisation
- Including drinker

Design of feeding system is probably as important as the type of feeding system itself



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Management of satiety

- Council Directive 2008/120/EC states that: 'to satisfy their hunger and given the need to chew, all dry pregnant sows and gilts must be given a **sufficient quantity of bulky or high-fibre food** as well as high-energy food'
 - Likely to reduce competition when pigs feed simultaneously
 - May be a disadvantage when sequentially feeding using ESF due to increased feeding time

Conclusions

- Chronic social stress is best minimised by avoiding competition for limited resources
- Feeding systems are a compromise between labour, space use and competition
- **Design and management of a system is equally as important as the type of system**