



Animal Welfare Assessment and Application to Pregnant Sow Housing

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A Quiz!

Which is More Welfare Friendly?

- 7'x 2' individual stalls, movement restricted
- Excellent BCS, low injury score
- Sham chewing/bar biting evident
- Good observation of individual pigs
- Concrete slatted floors



- Electronic sow feeder
- Pigs are able to move freely and social interaction is possible
- Inter-pig aggression → injuries
- BCS slightly variable
- Concrete slatted floors



Which is More Welfare Friendly?

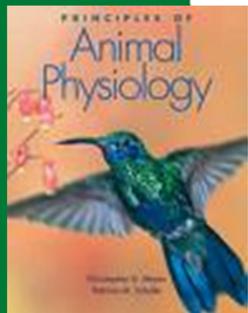


- Large space, freedom of movement
- Little inter-pig aggression, minimal injuries
- Difficult to observe individual animals
- BCS variable
- Wind chill 25 below

Which Is More Welfare Friendly?



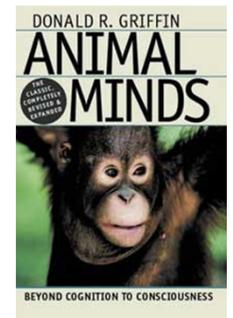
Why You Chose the Way You Did (We Don't All Think Alike)



Measures of health, growth and productivity



Quantitative and qualitative comparisons to wild or free-living conspecifics



Measures of affective states (suffering, contentment)

Function

Feelings

Natural Behavior



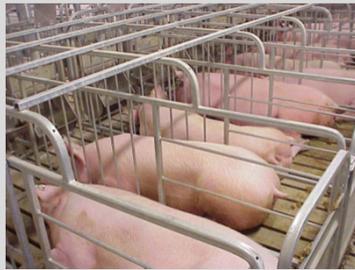
The Five Freedoms—One Paradigm for Connecting the Circles

- A complete look at animal welfare connects all the circles
- The Five Freedoms is one scientific assessment paradigm that attempts to do that
 - Freedom from hunger and thirst
 - Freedom from discomfort
 - Freedom from pain, injury and disease
 - Freedom to express normal behavior
 - Freedom from fear and distress
- Difficult to satisfy all of the freedoms simultaneously because of trade-offs among the features of animal care systems



Trade-Offs in Housing

(In general...there are always exceptions)



Intensive
Housing

Extensive
Housing

Physical Indicators of Well Being

Behavioral Indicators of Well Being



Physiologic Function

Stress is assessed by measuring

- Concentrations of hormones circulating in the blood
 - Cortisol
 - β -endorphins
 - Prolactin
 - Prostaglandin F-2 α
 - Oxytocin
- Heart and respiratory rates
- Immune system responses (blood cell types and concentrations)
- Research to-date suggests that, overall, physiologic measures of stress are similar for sows housed in stalls and those housed in group pens.



Health Measures

- With the exception of injuries, health of sows is primarily affected by
 - Daily management
 - Exposure to pathogens
 - Geographic location
 - Biosecurity measures taken
- Injuries—vary by housing type
 - Stalls—Pressure sores resulting from contact with bars and less frequent postural changes
 - Group pens—Bites and scratches resulting from aggressive interactions between sows
 - In total, fewer injuries in stalls, but rate of injury is substantively affected by how sows are managed



Behavior

- Space and freedom of movement
 - Stalls restrict movement ; when parity is high, sow may outgrow size of stall. Movement restrictions may translate to lameness, reduced muscle tone and mass, reduced agility, reduced bone strength.
 - When high quality feed and water available, sows in all systems are relatively inactive.
- Stereotypical behavior
 - Sows in all types of housing exhibit oral-nasal-facial behaviors
 - Stereotypical behaviors (repetitive behaviors with no obvious purpose) are more common in sows kept in stalls and small, barren pens



Behavior

- Social contact—Sows are social animals and will work for social contact.
 - Individual housing (stalls are one configuration) appears to be minimally aversive to sows as long as there is visual and other contact with other pigs
 - Stress can result if neighbors are incompatible (applies to both stalls and group pens)
- Aggression—Has been reported in all types of housing, but is often worse in group pens, particularly when unfamiliar animals are mixed.
 - Aggressive interactions can result in severe injuries.
 - Aggression in group pens can be reduced (but often not eliminated) by appropriate system design and management, especially attention to how feed is provided.



Behavior

- Control over environment and complexity
 - Sows in natural conditions control their interactions with the environment (create feeding, nesting, and defecation areas; seek shelter; wallow).
 - Sows in confinement cannot exercise control (flee aggressive neighbors, choose their social interactions)
 - Pigs react positively to environmental complexity (reduced aggression, varied use of living area, lower cortisol concentrations)
- Feed restriction—Limit-feeding exacerbates the effects of housing because it intensifies competition for food, and makes sows more restless and more motivated to forage.



Behavior

- Overall
 - Stalls adversely affect welfare by restricting movement and social interactions
 - Aggressive interactions are a challenge in group systems
 - Barren environments can create welfare negatives in any system



Production

- Estrus detection and weaning-to-estrus interval
 - Estrus in multiparous sows is not affected by housing type
 - Gilts in stalls exhibit more irregular estrus behavior
 - Weaning-to-estrus intervals are shorter for pigs in stalls than in groups
- Conception and farrowing rates
 - Study results are contradictory and strongly influenced by season and management practices
 - Housing sows in groups increases risk of rebreeding
- Litter size—Unaffected by housing type
- Overall, sows in stalls appear to have equivalent production performance to sows in groups



AVMA's Recommendations

Sow housing systems should

- Provide every animal access to appropriate food and water
- Reduce exposure to hazards that result in injuries, pain or disease
- Protect sows from environmental extremes, and promote good air quality and proper sanitation
- Facilitate observation of individual sows
- Allow sows to express normal patterns of behavior
- Minimize aggression and competition among sows

To address animal welfare in the long term, **sow housing efforts should follow a model of continuous improvement**. Advantages of current housing systems should be retained, while making improvements to overcome problems identified.

**Thank You for Your Time and
Attention**

