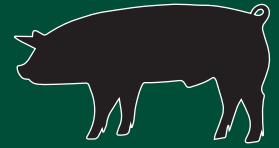


Gestation Group Sow Housing Options: Floor Feeding



Introduction

Housing sows in individual stalls has become commonplace across the pork industry. This method of production has grown in popularity because animals can be housed and cared for individually. However, growing consumer concern has increased scrutiny on this standard industry practice. Multiple states have passed legislation that mandates that pregnant females be group housed for specified portions of gestation. This change in system design and production method has raised concerns among producers, who have stated their need for information and specifications on group sow housing options. In Michigan, results from pork producer focus groups identified descriptions and cost comparisons of group sow housing options as their top educational need. This bulletin describes using floor feeding for group housing gestating sows.

General system description

One option for group sow housing is to house sows in pens, using a floor feeding system. Typically pens with floor feeding are partially slatted, with a concrete pad covering one-third to one-half of the pen. The rest of the pen is slatted floors. The concrete pad can be either flush with the slats or slightly raised.

In cases where barns are remodeled for group sow housing, the concrete pad is typically poured on top of the slats. For new construction, the concrete pad is most often designed to be flush with the slats.

With floor feeding, there is no internal gating in the pen area as is typically seen with systems using short stalls. Sows can move freely about the pen without having to navigate around feeding stalls. This can be advantageous during mixing, since sows should not be injured on protruding feeding stalls. This type of system does not provide any protection for the sows during feeding times, however, and is highly competitive.

Floor feeding systems house sows in small groups and group size commonly ranges from four to six animals per pen, while some operations house 20 or more animals per pen, depending on factors such as:

- » Size of the initial breeding group
- » Management practices
- » Penning plan

The feeding system is often a standard drop feeding system in which feed boxes drop feed directly onto a concrete pad. Another less common option is to use feeding equipment that can drop large amounts of feed at once. Either way, feed should be distributed across the concrete pad so that females can space out while eating. This reduces initial feeding aggression when feed is dropped onto the concrete pad.

The amount of feed dropped should equal the designated amount of feed per sow multiplied by the number of sows in the pen. For example, if the 10 sows in a pen are each meant to receive 4 pounds of feed, 40 pounds of feed should be dropped across the pen (10 sows x 4 lbs./sow = 40 lbs.).



Figure 1. Example of group sow housing with floor feeding.

Photo provided courtesy of Tom Guthrie, MSU Extension pork educator.



Figure 2. Example of group sow housing with floor feeding.

Photo provided courtesy of Tom Guthrie, MSU Extension pork educator.

Depending on the pitch of the concrete pad, footing in a pen can become slippery if sows urinate on the pad or if the summer misting system reaches the concrete when water is dispensed to cool sows. Drinkers should be placed over the slats to reduce the amount of water spilled onto the concrete pad.

Group size & make-up

Floor feeding systems are typically used in small pen settings with fewer than 10 sows per pen. Floor feeding is a competitive feeding system. There will be more aggressive or boss sows in competitive systems than in noncompetitive systems because the sows will fight for feed. Aggressive sows may have a negative influence on and injure subordinate sows they're housed with. This increases the potential for creating increased variation in body condition, multiple injuries due to fighting at mixing and at feeding, more lameness and reduced pregnancy rates.

Appropriate floor space allocation in competitive feeding systems is critical. Bigger and older sows should be provided more space than smaller and younger animals. Floor space allocation should be 15 to 18 square feet per animal for gilts, 19 to 24 square feet for mature sows, and 18 to 23 square feet for a mixture of gilts and sows (Gonyou, Rioja-Lang, & Seddon, 2013).

When using floor feeding in small pens the space is completely shared. This unprotected pen design

doesn't allow for loafing space or areas in which the subordinate animals can hide from the dominant animals. To foster less aggressive groups it's important to create pens of sows that are similar in size, parity and body condition score (BCS). This should result in reduced size variability and allow for similar feed allotments for each animal in the pen. The expected result would be an improvement in the management of the nutritional needs for sows and maintenance of appropriate BCS of sows within a pen.

It should be mentioned that some floor feeding systems house sows in large pens and spread the feed out across the entire concrete pad. In addition, these pens may have short solid walls or partitions installed throughout the pen to create loafing or hiding spaces for sows, yet these spaces aren't enclosed so sows can freely move in and out of them. In theory this will allow the subordinate animals to hide from the aggressive sows; however, the sows remain unprotected during feeding times and aggressive behavior may still take place.

Static versus dynamic groups

In group-housed production systems, how sows are penned together is extremely important. Gestating females are typically penned into static groups or dynamic groups. Static groups are pen groups of females that are mixed once, and no new animals are added to the pen after the initial formation of the group. Sows that become open or injured may be removed, but no new animals are added to the pen. Dynamic groups are those in which females are regularly added to pens with females already in them. Typically, dynamic groups are large groups with more than 40 animals in the pen, and they can be as large as several hundred.

Floor feeding systems typically use small pens, but most importantly, house sows in static groups. When using static groups the initial pen group formed remains constant and no new sows are added. If a sow is removed from the pen, there will be more floor space per sow in the pen than with pens that have maintained their original grouping. While this is a less efficient use of space, placing one or two new animals into a resident group of sows will cause aggressiveness and fighting, and the newly placed sows could be injured and subsequently need to be removed anyway. Therefore placing new sows into an established pen is not recommended and, in fact, is highly discouraged

when using competitive feeding systems such as floor feeding.

Managing replacement gilts

Managing replacement gilts in a group sow housing system is a critical component of maintaining a high-performing sow herd. Because gilts are smaller than older sows, they don't need as much floor space and can be housed at 15 to 18 square feet without decreasing their performance (Gonyou, Rioja-Lang, & Seddon, 2013). A typical pen that meets the space guidelines for four to five full-grown sows may also comfortably meet the guidelines for up to six gilts.

When forming gestation pen groups with gilts (females placed into a pen together), gilts should only be penned with other gilts, or possibly with younger parity sows (parity 1 and 2 sows), depending on available space. This allows for the most efficient use of space in small pen systems. It may also decrease competition between animals and better meet their nutritional needs, since all the females in the pen should require a similar daily feed allotment.

Equipment & technology needs

Floor feeding systems have minimal differences in equipment and technology from conventional stalled gestation barns. The feeding system is often similar to that used in conventional stalled gestation barns, and when retrofitting a conventional stall barn, some of the original gating and feed delivery system can be used. Repairs and maintenance for floor feeding systems are expected to be similar to that of a traditional gestation barn. The use of technology in this type of system is limited.

System specifics: Typical pen design

Floor feeding systems typically use rectangular, not square, pens for both new construction and remodeled facilities. When remodeling a traditional conventional stalled building, it may be feasible to use much of the existing feed line, which could reduce remodeling costs.

When remodeling conventional stalled gestation barns into group sow housing with floor feeding pen systems, producers must allocate more floor space per sow than in the conventional system. In many cases

this will decrease the number of sows that can be housed within the existing building shell or, if current sow numbers are to be maintained, will require producers to add space.

Decreasing aggressiveness with multiple feedings

With competitive feeding systems, such as floor feeding, it is recommended that sows be fed multiple times per day. This appears to decrease the aggressive nature of dominant sows and positively affect the nature of the group as a whole. Feeding sows two or three times per day has been reported to decrease aggressive behavior, which should result in less fighting and fewer injuries (DeRouchey & Tokach, 2013). It has also been suggested, but not extensively substantiated, that adding fiber to the diet can reduce aggressive behavior, because sows feel fuller and not as hungry throughout the day. Sows may exhibit fewer stereotypic behaviors when fed a high-fiber diet, but aggressive interactions between sows will remain the same compared to sows on a standard gestation diet (DeRouchey & Tokach, 2013).

Managing sow body condition, sickness, lameness & injuries

In competitive feeding systems (like floor feeding) that house sows in small common pens, producers and employees will have to develop ways to properly manage BCS. Managing BCS will be directly linked to initially penning sows of similar size and BCS together and feeding them accordingly.

Producers and employees must develop and follow observation protocols to identify and treat sick, lame or injured animals right away. Ideally, sows should stay with their original pen groups throughout treatment. If a female must be removed from the pen for treatment, she should be moved to an individual stall or a small pen where she can recover without being vulnerable to aggressive sows.

Training will improve employees' ability to identify sows soon after they are injured or become lame or sick and to provide aggressive medical care. Early treatment can help keep sows in their pen groups and minimize the number of sows that have to be housed individually due to injury or illness. This allows for maximum use of the space in a facility.

Labor needs & requirements

As producers convert their farms from individual stall to group sow housing, it will be important for them to train or retrain employees to use their observational skills differently than they have in the past.

Traditionally, swine producers have hired and trained employees to be task-oriented – to focus on completing tasks one at a time throughout the work day. When working with sows housed in groups, employees will have multiple tasks to focus on at one time and must also be aware of what is happening in the whole barn and in each pen. Improving employees' observational skills is challenging, but will improve the operation's overall efficiency.

The daily work routine will differ with the group housing system used. Production staff employees and farm managers should develop a workable outline of the important areas to be evaluated and tasks to be completed each day. The outline will need to be updated periodically to reflect changes on the farm.

Employees working in small-pen systems need to develop techniques for thoroughly observing all sows as individuals, even though they're housed in groups. Good management of a small-pen system often hinges on the caretakers' ability to identify sick, lame or injured animals and provide them with proper care in their resident pens.

Although the number of employees needed on most farms moving to group sow housing isn't expected to change, the employees' daily tasks and routines will need to be adjusted. Producers will need to focus their hiring efforts on finding people who can adapt to working with animals in groups. Employees will have to constantly be evaluating sows in pens while also completing their regular work throughout the day.

Advantages & disadvantages

All sow group housing systems have advantages and disadvantages. Those related to floor feeding systems are described in this section.

Advantages

- » **Limited moving and computerized parts** – Floor feeding systems have limited moving and computerized parts that may need replacement, potentially decreasing upkeep costs. Much of

the equipment will be similar to that used in conventional individual stalled gestation barns.

- » **Group feeding** – All sows are fed at the same time, resulting in decreased aggression at the start of the feeding period.
- » **Small groups may allow for better observation** – Because all of the animals are up and eating at the same time, it may be easier for employees to observe animals for sickness, lameness or injury. The relatively small pens typically used in this system may mean that employees aren't as overwhelmed by the number of animals to observe in each pen.
- » **Retrofit capabilities** – Floor feeding may allow for more straightforward remodels from traditional stall layouts than other systems. The original feed lines and feed boxes can be incorporated into the updated design, which may decrease the cost of the new group housing system.

Disadvantages

- » **Competitive system** – Floor feeding is a competitive feeding system. Sows remain unprotected while eating and subordinate animals have nowhere to hide from the dominant sows.
- » **Feed wastage** – Ten percent or more of the feed dropped onto the concrete floor may be wasted in this system.
- » **Inefficient use of square footage** – Floor feeding systems should be managed as static groups because removing animals from a pen group reduces the efficient use of space in the pen.
- » **Lack of individual feeding opportunities** – All the animals in the pen are fed at the same time, making individual feeding for particular sows nearly or completely impossible. Simultaneous feeding permits little or no control over the amount of feed that each sow gets and can increase BCS differences within pens of sows.

Conclusion

Floor feeding is a viable option for group sow housing. This type of group housing system allows for sows to be managed and observed in small pen groups. It also allows for straightforward retrofits of traditional conventional stall buildings, which could decrease the initial cost of implementing group sow housing. The labor needs and expectations are similar to those of a traditional stall building, though with more emphasis on observation and treatment of the animals in their original pens.

Producers considering floor feeding with small pen groups should determine the number of pens that would be needed, the feed system design and the flow of animals through the system. When assessing this type of system, producers should evaluate system costs and the need for employees to develop new skills.

For more information

Visit the Gestation Group Sow Housing page on the MSU Extension website at bit.ly/SowHousingOptions.

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