

Avoiding Landmines Converting to Loose Sow Housing

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Converting existing barns into group sow housing systems has an issue that new, purpose-built barns barely have to endure: compromise. No matter the scenario, retrofits always require some level of compromise, usually involving several aspects, because the barn was simply not designed with the retrofitted system in mind. Every compromise is a deviation from the ideal situation and therefore will have some impact on the animals in the system, as well as the people. The trick is to only make the compromises that minimize negative impact on the animals while avoiding the compromises that impact them the most. Unfortunately, this usually has a price tag associated with it, but the upfront cost is usually covered multiple times over by improved herd productivity down the line. There are many mistakes commonly made when converting barns to loose sow housing; this article will discuss the ones that appear to be the most critical for animal well-being and productivity.

1. Recommendations for Slatted Flooring

Slatted flooring poses a challenge to sows and gilts, and has been shown to be less forgiving than solid or bedded flooring. The challenge intensifies when the

animals are placed in groups, especially when aggressive encounters occur and they are moving around quickly in a more irregular manner. For this reason, bedded flooring or partially-slatted flooring is recommended over fully-slatted flooring. Certain designs of slats are also better than others. Although research has not been extensive in this area, the current recommendation for slats is for the gap width to be no smaller than 0.75 inches for drainage and no larger than 1 inch for foot health, and for the solid portion of the slat to be 5 inches wide (and definitely no less than 3 inches). Ensuring that the slats meet these requirements is critical to managing lameness in the herd. Slats with wider gaps by design, such as seen in many existing gestation barns, or due to chips/breaks in the slats can result in the sows' toes and dewclaws getting caught more often, especially during aggressive encounters, leading to more foot injuries. There are some producers that initially decided to keep their existing gestation slats during a retrofit. They quickly learned that was a bad idea when they introduced animals, and subsequently replaced the existing slats with slats that met these recommendations.

2. Layouts for Clean(er) Pens

Another common issue that often arises in barns converted to loose sow housing is the occurrence of pens that are chronically dirty. In partially-slatted barns, the goal is to encourage the sows to always dung over the slatted area and not on the solid concrete. Sows will not typically dung in areas they designate for resting. To make an area more attractive to sows for resting, the area should be more comfortable for lying than on the slats; four things that improve that comfort

include (1) having solid flooring or bedding, (2) keeping the area dry, (3) reducing drafts, and (4) having walls to rest against.

If a resting area becomes wet, it often encourages sows to dung in it, reinforcing the behaviour and more than doubling the issue. Designing resting areas with a slight downward slope towards the slats will help keep the areas dry and discourage dunging in them. It is also critical that the resting areas not have any low points in them, as this will encourage water to pool. Retrofits should include capping existing concrete with fresh concrete to create a slope and eliminate low points. It should not be overlooked to only install drinkers over slats, away from resting areas; this helps to keep the resting areas dry in the obvious way and also keeps walking traffic and defecating sows out of the resting areas. Other features that encourage traffic are feeders, enrichment devices, and direct passageways that lead to these features; resting areas should be free of these features and discourage thru-traffic.

Sows will also avoid lying in areas with drafts, especially in colder months, so air inlets should be aimed to drop air over slatted areas. The only situation when these drafts might become appealing for lying is when the ambient air temperature in the barn starts getting towards the upper end of the sows' thermal comfort zone, which may happen on hot summer days. Changing the air to drop over the resting areas during these hot days (if possible) and/or sprinkling water over slatted areas *might* help to encourage the desired dunging and lying patterns, respectively. The last point about maintaining clean pens is that sows

prefer leaning against solid partitions when they are resting. For this reason, it is best not to situate passageways (slatted areas) against a wall as this will encourage resting in dunging areas and potentially dunging in resting areas. Ideal resting areas can be created in retrofitted barns using partitions. Partitioned resting areas should be 6 to 7 feet deep and 10 to 12 feet wide as this encourages sows to lie parallel to the partition in group sizes they would naturally form. Larger resting areas (12 by 20 feet) are also acceptable, but can encourage dunging in them due to the distance from the slatted area.

3. Inclusion of Escape Features

Some aggression in group housing is unavoidable. However, pens can be designed to mitigate the impact that aggressive encounters have when they do occur. Submissive sows need to be able to escape from aggressive, more dominant sows. First and foremost, escape is more difficult with a high stocking density as other sows can get in the way, preventing escape. Space allowance in a mixed-parity group should never be below 19 feet per animal and more is always better. The inclusion of full-height (3.5 to 4') partitions throughout the pen, such as those used for designing resting areas, can provide submissive sows an object to escape to and hide behind. Passageways that create circular traffic flow through the pens also allows for submissive sows to escape aggressive encounters more easily. Escape can also be hindered by creating areas too tight for a submissive sow to get out of when another sow is bullying it. These tight areas, especially near feeders, should be avoided.

4. Adequate Space between Pen Features

To avoid creating areas too tight for submissive sows to escape from, all walls and obstacles should have at least 10 feet of space between them. This is simple physics: if an aggressive sow is 6.5 feet long and has another sow pinned against a wall that bullied sow needs the extra 3.5 feet to turn its body and get away. Always be cognizant of this 10-foot rule when designing the group pens. There needs to be *at least* 10 feet between feeders and walls (13+ feet is recommended behind feeders preferably), 10 feet between drinking areas and walls, 10 feet behind rear-exiting stalls, and 10 feet between any parallel walls. Although not optimal, passageways can be slightly narrower as long as they do not include the aforementioned features; these should be at least 8 feet wide to prevent a sow that is lying in the passageway from blocking the entire path. Note: Although research has confirmed the space needed behind feeders, the other information is garnered mostly from experience and deductive reasoning. It is hard to determine the marginal change in welfare when the space is reduced, e.g., by reducing passageways to 7.5 or 7 feet. Some producers have managed with even less space, but every marginal reduction results in a compromise (more so the less space there is) and “out-managing” these issues becomes increasingly difficult.

5. Best Management Practices (BMPs) for Mixing

When sows are initially mixed into gestation groups, it should occur at a time that avoids the critical period when their embryos are implanting in the uterus,

between days 7 and 28 post-breeding. Mixing can occur at weaning, after breeding and heat, or around 28 to 35 days post-breeding. The first option should only be done with stable rather than dynamic groups, and can make breeding quite difficult and result in mounting behaviour and its associated injuries; this option is not recommended. There is some research to suggest that reproductive performance might be reduced slightly if sows are mixed 2 to 7 days after breeding (as compared to 28 to 35 days post-breeding), but there are also many farms successfully implementing it with impressive production figures. These examples are typically following all other BMPs related to mixing. Most producers shy away from mixing sows 2 to 7 days post-breeding because of the fear of not being able to detect repeats in a group setting, but automated heat detection stations (which house and use teaser boars) make catching repeats easier and can often outperform heat detection by stock-people. Still, mixing sows 28 to 35 days post-breeding is a safe option with good production results and allows for heat detection and pregnancy-checking by stock-people, which is a familiar procedure for most producers.

Keeping gestating sows in stable (static) groups is best for quickly developing a social hierarchy, maintaining that hierarchy, and therefore minimizing ongoing aggression that can impact reproductive performance. However, it is also possible to keep gestating sows in non-stable (dynamic) groups as long as the groups are managed according to these mixing-related BMPs:

- Dynamic groups should be made up of at least 60 animals and preferably more than 100 animals.

- The number of new introductions – the subgroup – should be no less than 10% of the total group size, e.g., at least 20 sows should be placed in a 200-sow group. Typically, 10 to 25% works well.
- Animals should not be added to a group during the embryo implantation period (7 to 28 days post-breeding) of any of the animals in the pen and *definitely not* of the newly-added animals.
- If animals need to be removed from the group for welfare reasons, reintroducing them into the same group (if they are removed for more than a day) should be avoided or, if they will be reintroduced, they should have fence-line contact with the group while they are segregated.

Sorting animals into groups by size/parity, if possible, is also a good practice to avoid excessive bullying.

The condition of the pen that animals are mixed into should also be considered. The flooring should be dry to prevent animals from slipping as they establish their social hierarchy. This can be challenging for pens that are washed between (static) groups, but dryness should be the objective before animals are introduced. Animals should also be fed their full daily allocation just prior to being mixed and should be fed once again that day; this helps to minimize hunger-associated aggression on mixing day. Lastly, abide by recommended space allowances at the time of mixing (more is better) and by the aforementioned recommendations on escape features and space between features. Some producers even use a specific “mixing pen” for the first week that a group is

together, which has more space and a better design for submissive sows to escape aggressive encounters.

6. Prevention of Competition during Feeding Time

One of the main decisions that a producer has to make when choosing a group-housing system is how he or she is going to deliver feed to the sows. Some feeding systems do not fully protect the individual sows from being displaced by other sows; those systems are considered “competitive feeding systems.” Competitive feeding systems include floor-feeding, trough-feeding and trickle-feeding (with or without shoulder/open stalls). Why choose a competitive feeding system when there are good non-competitive ones out there?! Free-access stalls are one type of non-competitive system, which allows a sow to enter a stall and lock itself in and subsequently back up to let itself out. However, this system requires more barn space than other non-competitive feeding systems, such as electronic sow feeders (ESF), costing significantly more to construct. Besides the more well-known ESF system, there is also a newer system that combines both ESF with free-access stalls – a “free-access ESF.”

Both standard ESF and free-access ESF systems can often be used in a retrofitted barn with minimal need for concrete work, which tends to be one of the major costs of conversion. The ongoing benefits of these ESF systems are the ability to feed animals precisely to their individual needs and ensure that every animal receives an adequate amount of feed daily. If there is hunger-related aggression present in these systems, it will typically be around the entrance to

the feeders. That is why at least 10 feet is required between the entrance of the feeders and any other pen features, with 13 feet (or more) being highly recommended. It is also important not to overburden the ESF system. Limit the number of animals per feeder to no more than 65 for a standard ESF system and no more than 20 for free-access ESF systems, since a free-access ESF system requires the sow to back out of the feeder of its own will as opposed to another sow pushing it out as is the case in a standard ESF. Placement of the feeders to discourage fed sows from circling back to the entrance, providing 180° access to the feeder entrance, timing of the feeding cycle reset, and letting sows into the feeder when their ration is done are also thoughts that many experts recommend considering when designing an ESF system. It is critically important that, if you are going to use ESF, you train the gilts going into the system adequately on how to use them. Also be aware that training older sows on a new feeding system can be more difficult than training gilts.

Attention to these recommendations will help you to avoid major issues while converting to loose housing for your sow herd. It is important to remember that the biggest factor that impacts animal well-being in any housing system is husbandry. A good system can still struggle if it does not have good stock-people taking care of the pigs, and a less-optimal system might still be able to provide good welfare when the right stock-people are working with the pigs.

References

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