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The Reality of Sow Stalls

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Introduction

A major public issue for all US animal agriculture today is farm animal welfare. Using scientifically sound approaches to assess farm-animal well-being is crucial to the sustainability of US agricultural. Lawmakers are continually bombarded with proposed legislation on animal welfare and unfortunately there is a serious lack of available scientific data to address and defend farm animal welfare issues. The typical contemporary sow-keeping system—the 2 × 7 enclosure called a stall—is one of the most controversial welfare concerns facing the pork industry. Following European trends, use of individual gestation stalls has been banned via public referenda in Florida and Arizona, and new bills are being introduced in several other states. These bans have meant that research on the welfare of sows in different gestation housing systems has gained national attention, and US producers must consider modifying their systems accordingly.

Sow housing refers to methods of housing, penning and caring for breeding, gestating, and lactating sows. But, the sow housing issue mostly refers to "how pregnant sows are kept". With this controversial issue on the rise, we must not only consider the type of housing system that is best for the dry pregnant sow, but we must also consider the best system and management scheme for sows throughout all stages of reproduction.

So far, most research results indicate that other alternative housing systems do not necessarily lead to better sow well-being. Sows in stalls or pens have similar mean values across all measures from both biological and statistical perspectives. Thus, no one system has been clearly identified that is better than another based on current notions of sow welfare[1,2]. There apparently are, however, positive and negative features of all systems that have been studied including the individual stall.

Is the stall issue about welfare?

Is the stall issue really about what is best for the sow's well-being? In the US, it has become apparent that the stall issue has been driven primarily by perception and not science. Animal rights activist groups, like the People for the Ethical Treatment of Animals (PETA) say it is inhumane to confine a sow to a 2'×7' stall for her 16-wk gestational period in which she can not turn around, walk or stretch her legs. They also state on their website, that pigs develop compulsive behaviors (chewing bars and obsessive "water bottle" pressing) while in a stall because they are intelligent animals. It is easy for activists to make these claims and demand change, but these demands are unrealistic. Producers can not meet these demands without scientifically and reasonably established guidelines that will ensure the well-being of the gestating sow.

To scientists, these guidelines should evolve from sound and practical science, not the wants and needs of activists. As Kay Johnson of the Animal Agriculture Alliance so eloquently said, "Improvements in animal welfare should be based on reason, science and

experience, not on the opinions of activists who have no vested interest in farm animal welfare, but simply believe it is wrong to raise animals for food".

What does the science imply?

Based on science, there are positive and negative aspects in all systems currently used. As for reproduction, few studies have shown reproductive impairment in pregnant sows kept in stalls against sows in groups. Greater farrowing and reduced reproductive failure, as well as shorter wean-to-estrus interval and lower replacement rates have been reported for sows that have gestated in stalls compared with sows in groups[3-6]. Sows that have gestated in stalls farrow a greater number of live piglets and they also weaned more and heavier piglets than sows kept in groups[4,7]. Others have reported similar reproductive performance between sows in stalls and those in groups[8,9]. On the other hand, some studies have shown greater reproductive performance for sows in groups than in stalls[7].

Often stereotypies (e.g., bar biting) are used as a measure of welfare. Studies have shown differences in stereotypic behaviors between sows in stalls and those in groups[11]. Specifically, sows in stalls spend more time interacting with bars and trough biting than those in groups[3]. Still, others have reported no differences in stereotypic behaviors between sows in stalls and those in outdoor-groups[12]. Although, sow behavior has been shown to differ among housing systems, often it seems to be the non-housing component (i.e., direction of bar, other substances present) of the system that is responsible for the behavior displayed by the sow[1,12].

Others have used immune and endocrine traits to assess welfare of sows in stalls and groups. Most studies have shown no overall effect of the housing system on immune function or cortisol concentrations of the gestating sow kept in stalls or groups[13-15]. More recently, Karlen (2006) found an increase in neutrophils and a decrease in lymphocytes resulting in an increased neutrophil-to-lymphocyte ratio (indicative of stress) during late-gestation in sows housed in stalls compared with sows in groups, and reported a strong tendency for higher cortisol concentration among sows housed in hoops than in stalls[3].

Recently, it has been shown that welfare challenges change over time; with those sows in groups during early gestation having increased incidence of scratches, higher estrus return, and higher cortisol concentration, whereas, those sows in stalls have increased incidence in lameness during late gestation[3]. These findings are similar to those reported by Salak-Johnson[8]; lesion scores for group-housed sows increased at mixing, and then plateau during mid-gestation, and increased once again during late-gestation. Thus, it is possible that one may have to manage sows differently during different stages of reproduction.

With few differences reported between housing systems that directly correlate with improved well-being, the housing system per se may not be the critical component, but other factors (e.g., environmental) or constraints (i.e., physical size, inability to turn around) of the system may contribute to the complexity of assessing housing systems and making improvements on welfare. Modifications in the stall and management schemes may allow for us to provide the sow a more "welfare-friendly" housing environment.

A case for the stall

From a scientific standpoint, the alternative to the individual gestation stall is to identify, improve, and optimize a modified-stall system and management scheme that is more "welfare-friendly" for breed and pregnant sows. If the modified housing system better compliments the physiology and needs of the sow, then the consumer would be satisfied and the stall could be saved.

Despite the fact that the standard stall will never provide freedom of movement, we have done little to avoid the "attacks" and criticism by the public. In 1989, Curtis documented that the standard gestation stall (2' x 7') was larger than the average sow's body size[16]. Thus, the stall was large enough to contain the sow, but the stall did not provide enough space for normal postural adjustments[16]. Since 1989 the physical size of the sow has changed and most likely so has her needs.

Today, most sows housed in the standard gestation stall cannot turn around or lie down in full recumbence without either touching the feeding trough or stall walls, and social interactions among sows are limited. Standard gestation stalls are criticized for restricting sow movement, preventing the sow from turning around while limiting sow socialization.

If the stall issue is really about the inability of the sow to lie in full lateral recumbence, then, *would increasing the width and the length of the stall provide a higher welfare environment for the sow?* McGlone reported that variation in the physical size of sows exists not only within groups of sows at one location, but variation also occurs between farms[10]. He also reported that the body depth of sows increased by 1.2 mm per day of gestation, thus the increased body depth means that a pregnant sow is 127 mm (~5 inches) deeper at the end of gestation than at the beginning. The midsection of a sow undergoes the greatest change in size and shape during gestation. McGlone hypothesized that this information could be used to refine gestation-stall designs to accommodate the changing size of pregnant sows.

If the stall issue is really about the inability of a sow to turn around and interact socially, then, *would allowing sows to turn around and socially interact or move more freely provide a higher welfare environment?* In the late 80's a "turn-around" stall was developed which enabled sows to "turn around without difficulty" but the industry chose not to adopt this concept[17]. In Germany, producers have begun to implement a stall which they refer to as "free-access" stall. This stall system allows sows to "come and go as the sow chooses". With this stall system sows can stay in the stall 24/7 or they can choose to leave their stall space, they have a choice.

Although there are advantages and disadvantages associated with sows maintained individually and in groups during gestation, no housing system has been improved, developed, or optimized such that it ultimately improves the welfare of the gestating sow. There are alternatives to the "standard gestation stall" and some of these alternatives include a modified gestation stall system, which warrant investigation.

Summary

The negative public perception towards the use of gestation stalls is a continual problem for the pork industry, thus researchers and producers must continue to work to

find a solution, which, first and foremost, enhances the well-being of the sow. However, solutions should be found that do not create a negative economic impact for the American pork industry. We must scientifically develop, validate, and implement alternative housing systems and management strategies that are both practical and economically feasible but that will effectively sustain sow well-being while increasing the efficiency of producing pork. A well-defined, science-based assessment of pregnant sow's welfare is essential to the future of the entire livestock industry.

Contrary to the claims of animal rights activists: 1) it is possible to improve and modified the gestation stall and implement management strategies utilizing modified individual housing equipment that will ensure the well-being of the sow, 2) today's producers who follow the current animal-care guidelines and the most recent scientific recommendations for animal welfare management systems are already providing environments that are better for the sow than in the past, and 3) producers and scientists do have sow welfare as a top priority and are determined to find a better housing environment that enhances the overall well-being of the sow.

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