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Behavioral problems associated with sow housing

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Introduction

In the wild, sows form groups of three or four related individuals who share a home range. These sows are typically accompanied by their offspring until the pigs reach one year of age, at which time the majority of them disperse and form groups of their own. Boars are not part of the group until a sow enters heat; at this time he will join the group and remain until the sow is no longer receptive. Entry of unrelated sows into the group is resisted and usually does not occur in the wild. A sow will leave her group and move toward the outside of the home range when it is time to farrow. She will remain separated for approximately ten days and then she and her litter will return to the group. She is readily accepted by the group on her return.

A group size of three to four is substantially smaller than that used in modern production systems, and with this alteration from the normal social structure arises challenges to managing sows in our systems. The major challenge producers face is controlling excessive aggression. This problem has been addressed by severely limiting the sow's movement by placing her in a crate in which she cannot aggress her neighbors—nor is she able to turn about. This, in turn, has created further problems resulting in unresolved aggressive encounters with neighbors, thwarting of motivations to ambulate, decreased responsiveness to external stimuli, lameness, and the performance of stereotypic behavior.

Three levels of sow confinement can be classed as follows:

- **Extensive:** a system in which sows are kept outdoors on pastures or wood lots
- **Intermediate:** a system in which sows are grouped in pens
- **Intensive:** a system in which, during gestation and farrowing, sows are confined to a stall, measuring approximately 0.61 m by 2.3 m (2 ft by 7.5 ft)

Each level of confinement presents its own challenges to managing the sow herd.

Extensive confinement

Sows in extensive systems do quite well and the problems that are present arise due to limited resource availability and the introduction of new individuals to the group. The first obvious resource of concern is food. The majority of fighting occurs when sows on pasture are fed in a common feeding area, at which point the most dominant sow will be in control of the resource and not allow subordinate sows to eat. As with all group housing systems, there are a couple of management practices that can assist in reducing this aggression. First, feeding stations can be spread apart such that dominant individuals cannot control all the feeding stations. Second, feeding stalls can be placed in the pasture such that sows are separated while eating and can even be locked into the stall until they finish the meal. This is ideal and also allows the farmer to confine an animal if she needs medical treatment, pregnancy checked, etc. Other sources of limited resources are huts for farrowing, a warm shelter in the winter, a water station, and a wallow or wet area for lying in the summer. Special attention should be paid to these important resources to assure that more than ample access to each is provided.

The second significant problem arises when individuals need to be added to the group. One should never introduce a single sow into a group, as fighting will be severe. If introductions are necessary, a sub-group of familiar individuals should be introduced into the larger group to help decrease the fighting. By introducing a sub-group, one individual cannot be singled out and the sub-group will help fend off attacks by a resident sow. Allowing the sub-group to live in a separate pen with a common fence to the resident group will also help decrease aggression. These individuals will have time to become familiar with one another yet are unable to fight through the fence.

Intermediate confinement

The intermediate confinement system has all of the problems as the extensive system with the added pressure that a sow being aggressed upon cannot escape the attacks of her penmates. In addition, the higher degree of confinement compared to the extensive system's means that it is much easier for a sow to limit access to the feed,

sleeping area, and waterer. If the sows are allowed ad libitum access to feed, there is little effect on growth, and fighting will be minimal; however, it is usually not feasible to provide sows ad libitum access to feed, as they will become too fat. However, a diet that is low in energy and high in bulk can be used successfully to increase the amount of feed provided to sows.

If this system does not use bedding, an added problem arises due to sow boredom. Typically sows spend approximately ten hours per day rooting, grazing, and browsing. Confinement without bedding prevents the sow from performing any of these behaviors. By thwarting the sow's drive to root and forage, aberrant behaviors develop to address these drives. Typically these behaviors are expressed as tail biting, bar biting, tongue sucking, belly nosing, and high levels of aggression. The addition of bedding such as straw, peat, or wood shavings can help to prevent and decrease the occurrence of aberrant behaviors. The inclusion of "toys" in pens has shown to be of limited value as the animals use them initially but quickly become accustomed to the objects and ignore their presence. Adding new individuals in this type of system should be avoided if at all possible because the ability to escape attack is almost impossible. The intermediate confinement system would typically use farrowing crates, and the concerns for housing sows during farrowing will be addressed below.

Intensive confinement

Intensive systems house sows individually so that all concerns about physical attacks on individuals are diminished. However, research has shown that sows will fight their neighbor between the bars, but because they can not contact, these disputes remain unsettled and the level of aggression in the sow remains high. So although the sows are prevented from physical injury due to fighting in groups, they must still cope with the psychological stress of unsettled aggression. As with sows in intermediate confinement systems, sows in intensive systems are thwarted from performing foraging and ambulatory behaviors. Prevention of these natural behaviors causes an increase in the performance of stereotypic behaviors as

compared to those expressed in group housing systems. Much of the aberrant behavior can be linked to the limited diet which sows are fed. Because sows are limit-fed during gestation, they remain highly motivated to eat, and this adds to the high level of frustration, thereby decreasing the threshold of aggression.

Problems may also arise due to the type of farrowing environment in which sows are placed. This environment is typically very similar to the intensive housing used to restrain gestating sows. However, an added concern arises because sows are placed within 76 cm (30 in) of each other. The close proximity of sows and litters prevents sows from distinguishing the distress vocalizations of their own pigs with that of their neighbors. Because sows in the wild would have isolated themselves during this time, sows in today's confinement systems have not evolved a mechanism to cope with the level of noise and piglet vocalizations associated with having many sows in such close proximity during farrowing. The high degree of noise in the farrowing house also prevents sows from forming mother-offspring bonds with their piglets as much of these relationships use vocalizations between the two. It is still unclear why sows savage their offspring, but many researchers believe that frustration due to confinement and the low threshold of aggression present in the sow herd predisposes the sow to kill her piglets.

Conclusion

Clearly, individual confinement and group housing of sows has allowed farmers to better manage the sow's nutrition and to maintain her in a stable thermal environment. However, with increased confinement comes increased social pressure leading to stress. It has been well established that both physical stress and psychological stress have profound effects on productivity by affecting immune function, growth, and reproduction. Much more research is necessary to define an environment which fulfills the needs of both the producer and the sow.

