

12-29-2010

## Natural Farrowing Behavior of the Sow and Piglets

Anna K. Johnson

*Iowa State University*, johnsona@iastate.edu

Jeremy N. Marchant-Forde

*U.S. Department of Agriculture*

Follow this and additional works at: [https://lib.dr.iastate.edu/ans\\_whitepapers](https://lib.dr.iastate.edu/ans_whitepapers)



Part of the [Agriculture Commons](#), [Animal Sciences Commons](#), and the [Behavior and Ethology Commons](#)

---

### Recommended Citation

Johnson, Anna K. and Marchant-Forde, Jeremy N., "Natural Farrowing Behavior of the Sow and Piglets" (2010). *Animal Science White Papers, Technical Reports, & Fact Sheets*. 15.

[https://lib.dr.iastate.edu/ans\\_whitepapers/15](https://lib.dr.iastate.edu/ans_whitepapers/15)

This Report is brought to you for free and open access by the Animal Science at Iowa State University Digital Repository. It has been accepted for inclusion in Animal Science White Papers, Technical Reports, & Fact Sheets by an authorized administrator of Iowa State University Digital Repository. For more information, please contact [digirep@iastate.edu](mailto:digirep@iastate.edu).

---

## Natural Farrowing Behavior of the Sow and Piglets

### Abstract

To determine the best practices for providing good sow and litter welfare in the farrowing accommodation, a good starting point is to re-examine the behavioral patterns that have been documented around farrowing and during lactation, in a natural or semi-natural environment. There is a series of behaviors carried out, with sows and piglets undergoing various phases of isolation, community integration, and living. Jensen has proposed that maternal behavior can be divided into six distinct parts: (i) isolation and nest site seeking, (ii) nest building, (iii) farrowing, (iv) nest occupation, (v) social integration, and (vi) weaning [1].

### Disciplines

Agriculture | Animal Sciences | Behavior and Ethology

### Comments

This report is published as Johnson, A. K., and J. N. Marchant-Forde. 2011. Natural farrowing behavior of the sow and her piglets. Pork Information Gateway. Factsheet PIG 05-04-01.

## Natural Farrowing Behavior of the Sow and Piglets

### Authors

Anna K. Johnson, Iowa State University  
Jeremy N. Marchant-Forde, USDA-ARS

### Reviewers

Yuzhi Li, University of Minnesota  
Ed Pajor, University of Calgary

### Objectives

Define and discuss the six phases of farrowing behavior for the sow and her piglets.

### Introduction

To determine the best practices for providing good sow and litter welfare in the farrowing accommodation, a good starting point is to re-examine the behavioral patterns that have been documented around farrowing and during lactation, in a natural or semi-natural environment. There is a series of behaviors carried out, with sows and piglets undergoing various phases of isolation, community integration, and living. Jensen has proposed that maternal behavior can be divided into six distinct parts: (i) isolation and nest site seeking, (ii) nest building, (iii) farrowing, (iv) nest occupation, (v) social integration, and (vi) weaning [1].

### Isolation and Nest-Site Seeking

Outdoor wild, feral, and domestic sows proceed through isolation and nest-site seeking 48 to 24 h prior to the birth of the first piglet. The sow will leave the social group and seek isolation. Sows walk great distances, between 1½ and 4 miles (2.5 and 6.5 km; [2-3]) and investigate many potential nesting sites before finally being chosen. Jensen noted that the sites were often situated away from the usual “home range” of the sow, and were often chosen to provide a degree of both vertical and horizontal protection and some form of a slope [2, 4]. When choosing a suitable nesting site, sows preferred: (1) to use a variety of substrates for nest construction, (2) that the nest walls were structurally sound with well-formed sides, and (3) for the ground to slope [2].

### Nest Building

Nest building behavior involves an organized sequence of activities. The chosen nest-site is hollowed out to a depth of 2 to 4 inches (5 to 10 cm) by rooting [2]. Grasses, roots, and leaves are collected, and are used to line the nest. Larger branches are arranged over the nest, and grass and other fine materials form a roof over the branches. The effort that can be made to construct the nest can perhaps be illustrated by the fact that a single nest of a free-ranging sow in Brazil contained 560 lb (255 kg) of plant material! [5].

## Farrowing

Farrowing often begins a few hours after the end of nest-building. Sows are usually passive once farrowing starts, and carries out very few postural changes. Sows often stand, turn, and sniff the first piglets born [2]; but this behavior declines as more piglets are farrowed. Sows do not get up to help the piglets from their membranes. The umbilical cord is normally torn when the piglet moves around to the udder. Jensen proposes that this passivity may be due to the fact that the sow gives birth to a large number of active young, and that to engage in maternal behavior individually as the piglets are born, may place them at unnecessary risk of accidental crushing. After farrowing is complete, sows are inactive for 90 to 95 % of the time during the first 48 hours. This inactivity may be a behavioral adaptation by the sow to reduce crushing, and to allow the establishment of a teat order [1].

## Nest Occupation

Nest occupation occurs over the 7 to 10 days after farrowing is complete. Maternal behavior has a very organized pattern mainly revolving around nursing. Nursing can be initiated either by the sow lying on her side and presenting her teats, or by the piglets squeaking at her head and (or) massaging the teat area. Eventually the whole litter vigorously butts and jostles for position at the teats, with or without attaching themselves [7]. Often at this time, piglets vocalize intensely and continually [8]. Götz reported that sows spent most of their time in farrowing stalls in lateral recumbency (62 to 85 %); but this decreased over the lactation period [9]. Ellendorff and Poulain reported that during nursing, the sow's grunts became rhythmical and grunts were low at first but became more rapid [10]. While rapid grunting was still in progress, the whole litter became quiet, with each piglet suckling. This period lasted between 7 to 38 seconds (average 15 seconds), and was followed by another phase of active stimulation with predominant piglet behaviors involving butting and nosing at the udder. This later period ranged from less than 1 minute up to several minutes, until piglets either detached themselves from the teat, fell asleep, engaged in other activities, or the sow ended the nursing period by standing up or rolling onto her sternum to hide her teats [7].

## Social Integration

In a free-range situation, the sow and piglets stay away from the rest of the herd for at least the first week after birth [1]. During the first 1 to 2 days, the sow eats very little, and stays close to her nest [11]. Later, she leaves the nest for longer periods, eats further away, and eventually rejoins the herd for morning feeding (on average 7 days after birth). The litter remains in the nest for a further 2 to 3 days, until the nest is eventually abandoned and the litter is gradually introduced into the herd. The behavior of the sow and litter during this stage of nest occupation probably establishes the sow-offspring recognition that is important once social integration has occurred [11]. Social integration for the sow and her litter occurs gradually over the next few days. Free-range sows begin integrating their litter into the herd towards the end of the second week [1]. This allows time for family bonding to become complete before introduction to other litters. This introduction results in a shift of social interactions away from litter-mates towards other piglets of a similar age [12]. The frequency of these interactions gradually decreases to a steady low level after about eight weeks. These results have important consequences for the design of group farrowing accommodation. It would seem to be appropriate to allow mixing of litters prior to weaning, but not before about 14 days postpartum [13, 14].

## Weaning

Weaning is likewise a gradual event, in effect, natural weaning starts early in lactation. The frequency of suckling declines gradually from the first week, and the number of suckling terminated by the sow increases, perhaps indicating that the sows become less inclined to nurse [3]. Piglets begin to consume solid food from around 4 weeks postpartum. By 8 weeks, solid food constitutes a large part of the piglets' diet [15-16]. The number of piglets missing from suckling also gradually increases. Weaning is completed anywhere between 8 weeks [17] and 19 weeks postpartum [18]. There can be a quite large variation in weaning age occurring within a given litter [15].

## Summary

Understanding how the sow's behavior alters before, during, and after farrowing can help scientists and producers incorporate unique facility designs into the farrowing environment. Single or additive alterations to the environment may enhance the welfare of the sow and her litter. For example, encouraging the sow to remain passive during the first 72 hours after birth reduces the risk of piglets being killed through over lay by the sow. Finally, good and consistent sow performance likely will improve her productive lifetime within the herd.

## Literature Cited

1. Jensen P. Maternal behaviour and mother-young interactions during lactation in free-ranging domestic pigs. *Appl. Anim. Behav. Sci.* 1988;20:297-308.
2. Jensen P. Observations on the maternal behaviour of free-ranging domestic pigs. *Appl. Anim. Behav. Sci.* 1986;16:131-142.
3. Jensen P, Floren K, Hobroh B. Pre-parturient changes in behaviour in free-ranging domestic pigs. *Appl. Anim. Behav. Sci.* 1987;17:69-76.
4. Jensen P. Nest site choice and nest building of free ranging domestic pigs due to farrow. *Appl. Anim. Behav. Sci.* 1989;22:13-21.
5. Zanella AJ, Zanella EL. Nesting material used by free-range sows in Brazil. In: M. Nichelmann, Wierenga HK, Braun S (Editors), *Proceedings of the 3rd Joint Meeting of the International Congress on Applied Ethology*, Berlin. KTBL, Darmstadt, Germany, 1993. p 411.
6. Johnson AK, Morrow JL, Dailey JW, McGlone JJ. Pre-weaning mortality in loose housed lactating sows: Behavioral and performance differences between sows who crush and do not crush piglets. *Appl. Anim. Behav. Sci.* 2007;105:59-74.
7. Johnson AK. Behavior, physiology and performance of sows and their litters produced on a sustainable pork farm. 2001a. PhD Thesis, Texas Tech University Lubbock, TX.
8. Appleby MC, Weary DM, Taylor AA, Illmann GI. Vocal communication in pigs: Who are nursing piglets screaming at? *Ethol.* 1999;105:881-892.
9. Götz M. Changes in nursing and suckling behaviour of sows and their piglets in farrowing crates. *Appl. Anim. Behav. Sci.* 1991;31:271-275.
10. Ellendorff, F, Poulain, D. Milk ejection and milk ejection failure in sows. *Aust. Soc. Anim. Prod. Proceed.* 1982;14:670.
11. Jensen P, Redbo I. Behaviour during nest leaving in free-ranging domestic pigs. *Appl. Anim. Behav. Sci.* 1987;18:355-362.
12. Petersen HV, Vestergaard, K, Jensen, P. Integration of piglets into social groups of free-ranging domestic pigs. *Appl. Anim. Behav. Sci.* 1989;23:223-236.
13. Rudd AR. The welfare of the peri-parturient sow and her piglets in experimental loose-housed and confined farrowing systems. 1995. PhD Thesis, University of Cambridge,
14. North L, Stewart AH. The effect of mixing litters pre-weaning on the performance of piglets pre and post weaning. In: *Proceed. Brit. Soc. Anim. Sci.* 2000. p 135.
15. Jensen P. Nest building in domestic sows: role of external stimuli. *Anim. Behav.* 1993;45:351-358.
16. Jensen P. The weaning process of free-ranging domestic pigs – within litter and between-litter variations. *Ethol.* 1995;100:14-25.
17. Newberry RC, Wood-Gush DGM. The suckling behaviour of domestic pigs in a semi-natural environment. *Anim. Behav.* 1985;95:11-25.
18. Jensen P, Stangel G. Behaviour of piglets during weaning in a seminatural enclosure. *Appl. Anim. Behav. Sci.* 1992;33:227-238.