

# Sow Welfare Fact Sheet



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## Housing and Welfare of Sows during Gestation

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**Background:** Over the last few decades, sow housing has generally moved from somewhat extensive systems towards intensive systems, with sows housed indoors, in non-bedded individual enclosures called gestation crates or stalls. These housing systems offer some benefits for the farmer, such as housing more sows per unit area compared with loose housing systems, incorporation of a mechanized manure handling system reducing both straw and labor costs and making monitoring and care of individual sows easier. However, gestation stalls may also have a number of disadvantages for sow welfare, and this evidence, together with society's ethical issues regarding close confinement, has led to increased scrutiny of these systems, resulting in legislation banning these systems in the European Union and a number of states within the U.S. The main alternative is to house the sows in groups in open pens. However, group housing also has welfare concerns, mostly centered on aggressive social behavior. There is a growing realization that ultimately the issue of sow welfare in gestation housing systems may be outside the welfare scientists' sphere of influence. Close confinement of livestock is an emotive subject for the general population and ethical viewpoints can greatly affect the evaluation of different systems and the associated scientific data. Notwithstanding, the aim of this paper is to summarize the effects of different housing systems on the welfare of the sow during gestation.

**Gestation stall:** In its simplest form, the gestation stall is a pen designed to encompass the sow's static space requirements – that is, the space occupied by a sow when standing or lying on her sternum. Stalls are typically constructed of tubular metal frames with a feed trough and drinker at the front, and are about 2.2 m long, 0.6 m wide and 1.0 m high, although there are variations on these dimensions on commercial farms. Within the stall, the sow is unable to turn around and simple movements such as standing up or lying down may be difficult if the sow is large, because the dynamic space requirements needed to carry out these posture changes are greater than the static space requirements. Most stalls are situated within fully-enclosed, climate-controlled buildings with no bedding; slatted floors allowing urine and feces to pass through into a slurry pit under the floor.

**Group housing:** When sows are not kept in individual stalls, they are kept in groups. The term "group housing" however, does not describe one simple type of system, but rather a wide variety of systems, with many varying features, all of which can impact the welfare of the sows within them to varying extents. Group housing can be based in fully-enclosed buildings, in open-fronted buildings, in buildings with access to outdoors or fully outdoors with temporary shelters. The number of sows in each group can vary greatly in size from 3 to hundreds and the amount of space per sow may differ greatly. The group may be stable, meaning sows are mixed once when the group is formed and then have few changes, or may be dynamic, with sows leaving and entering the established group multiple times. Depending on the type of housing, the floor may be fully-slatted, part-slatted, solid floored and non-bedded or solid floored and bedded with straw, corn stalks or wood shavings. Outdoor systems may be on grass paddocks or dirt lots. The feeding system will have a major impact on overall welfare depending on whether it is competitive, such as floor or trough feeding, or allows sows to feed without being displaced, such as electronic sow feeders or individual feeding stalls into which the sows are secured.

**Welfare concerns:** The major issues surrounding the housing of sows during gestation are focused on the detrimental effects of close confinement and barren environment afforded by stalls on the one hand versus the detrimental effects of aggressive social behavior afforded by group housing on the other. When assessing welfare, it is important to use an amalgam of measures, including behavior, anatomy, physiology, health and productivity. Looking at all the data contained within the scientific literature, a clear conclusion cannot be drawn. The most common error is making the false assumption that it is a simple stall versus group comparison. Major literature reviews conclude that either sow welfare is improved in groups or that there are no real welfare differences between stalls and groups.

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**Welfare in gestation stalls:** Certainly, close confinement restricts the sow's behavioral repertoire and may increase the incidence of stereotypic behavior, but the latter is also attributable to barren environments, and thus where the quality of space in a group is equivalent to a typical stall, behavioral differences will be slight. Stalls also reduce cardiac function, alter body conformation, reduce bone strength and makes posture changes more difficult. The physiological assessment of the sow's welfare has produced ambiguous data. Typical welfare measures of activation of the hypothalamic-pituitary-adrenal axis show stalls to be better or worse than groups, depending on the study. Aggression does occur between sows in neighboring stalls and may have high intensity due to the lack of opportunity to reach a clear outcome. Regarding health, it would appear that the balance of data shows sows in stalls to have more problems. Lameness appears to be higher for sows in stalls, with lower immune function and higher disease incidence than group housing, but hygiene management is a crucial factor. Skin lesions attributed to pressure, such as decubital ulcers, are more common in stalls. Productivity, using measures of sow reproductive output, shows no advantages for stalls.

**Welfare in groups:** In open pens, sows are able to perform more of their normal behavioral repertoire. The presence of bedding or outdoor access will increase the repertoire further. The ability to walk about increases cardiac function, muscle and bone strength and makes posture-changing easier. Some studies show HPA axis activity to be elevated in groups compared to stalls, whereas other studies show the opposite. Being social animals, sows will use aggression to establish and maintain a social hierarchy, and gain access to resources. Ordinarily, aggression is only prevalent when a new group is being formed. Once hierarchy is established, aggressive interactions are low in incidence and severity. Aggression in group housing systems cannot be eradicated completely, but aggression can be kept at a minimal level by a combination of environmental and management factors. Lameness is lower in groups, especially in bedded systems, but skin lesions attributed to aggression are more common in groups. Productivity, using measures of sow reproductive output, shows no advantages for groups.

**Conclusions:** The welfare of sows during gestation remains a contentious issue. The most important aspects to consider are, firstly, that aggregating housing systems into simple categories such as groups and stalls is not beneficial in understanding the welfare of gestating sows, and secondly, that no matter what the system, the management (quality of stockmanship) used within that system will have the greatest impact on the welfare of the sows. Each specific system has to be looked at individually and different systems have different advantages and disadvantages in terms of animal welfare. In group housing, low levels of aggression are facilitated by using a non-competitive feeding system, establishing stable groups where possible and housing the sows with greater than minimum recommended space allowances with, where possible, access to bedding or manipulable material. When mixing occurs, pre-exposing sows prior to mixing is advantageous, as is having a pen design that allows sows to avoid aggressive interactions as much as possible, or to readily escape if an agonistic interaction is initiated. The minimum recommendations for a gestation system should include the following key features:

- A design that minimizes aggression and competition for all individuals
- A design that allows sows to express normal patterns of behavior
- A design that protects from environmental extremes
- A design that protects from potential sources of injuries, pain and disease
- A design that is safe for the stockperson and is relatively uncomplicated to manage successfully

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