

# **ADVANCES IN SOW AND GILT MANAGEMENT**

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## **ABSTRACT**

In highly prolific sow units you have to keep a special eye on dry sows. To reduce the increasing overall losses of dead sows it is necessary in the first place to optimize the feeding management. Three main suppositions have to be fulfilled: individual, undisturbed and simultaneous. Self-locking stalls enable the sows to eat their individual quantity of concentrate in a private atmosphere. In respect to husbandry there are three aspects to consider as well. First, you have to do everything for a quick and stable social hierarchy. Second, each sow has to fill her stomach completely at least once a day. And third, the lying comfort has to be adequate to the very different situations in respect to weather and individual body condition. In this respect you need, in each pen, at least two floors with different insulation properties.

## **INTRODUCTION: TOO HIGH SOW LOSSES**

Low hog prices have driven successful pig producers to focus a great deal on cost control. While not one of the major cost centres in swine production, replacement rate of gilts has reached a level that is too high, with more than 50% in many units. In addition, the performance and particularly health status of such herds is suppressed. Therefore we have to ask the question: How should we manage the modern highly prolific sow to lower the risk for a too early loss? What are the risk factors in respect of feeding and husbandry?

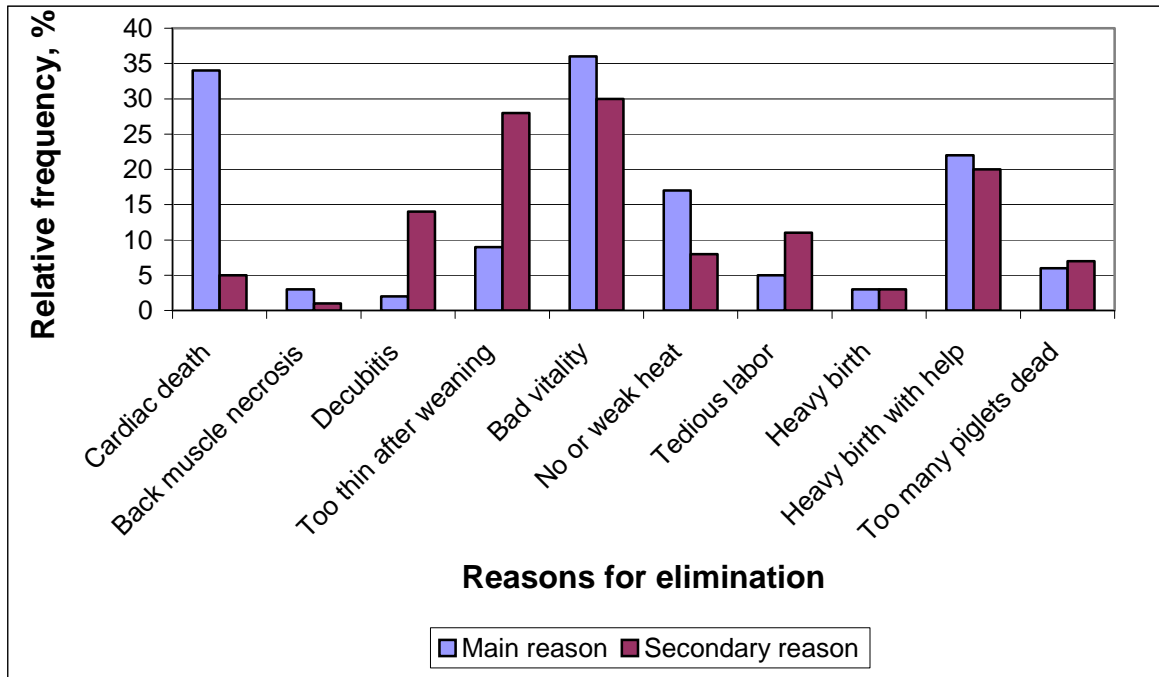
The Fachhochschule Soest in Germany investigated, in 46 piglet producer units, the background for sow losses. In many cases, there is a combination of several reasons which lead to the culling decision. Therefore the scientists identified both main reasons and secondary reasons. Most of the sows were culled due to age and fertility. But how old is an old sow? In some farms the “age” already begins after the 4th litter (Figure 1).

In many cases you cannot detect the real culling reason. In a German field study from November 2004 to November 2005, dead and culled sows from four sow herds were brought to a pathology institute and a post mortem investigation was performed. Results showed that 47 % of the post mortems were not because of infectious disease, 33% were from infections and 20% were due to ruptures and accidents (Figure 2).

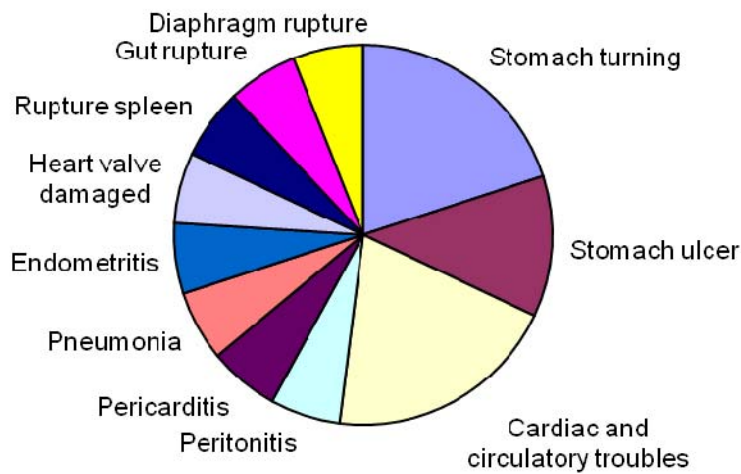
We know that there are not only big differences between different farms but also between different countries. In Germany, we have a culling rate of 5 to 7%, in The Netherlands only 5%,

but in Denmark 15% on average. A certain percentage in Denmark is due to mercy killing of sows with shoulder lesions, but the overall percentage is still much too high.

**Figure 1. Reasons for culling sows in German sow units. (Freitag and Wittmann, 2008)**



**Figure 2. Pathological-anatomical diagnostic findings. (Nienhoff, 2007)**



## **STRATEGIC MANAGEMENT MEASURES IN FEEDING**

To simplify the actual problems it is useful to restrict our efforts only to the pregnant sow. Furthermore we have to differ from reasons by feeding or by husbandry. Settling new housing, firstly you should be concerned with feeding. After determining the feeding system then it is time to decide the housing system.

In Europe, sows have to be kept in groups from week 5 of gestation until one week before farrowing (EU guideline 2001/88/EG). The hierarchy, which is among sows, can be a problem when feeding them in groups. Alpha sows (these at the top of the ranking system) can tend to dominate feeder entrances. This intimidates more timid sows, who may not be able to easily access their feed.

There are 3 principal points which should be achieved by the feeding system:

1. Each sow has to be fed each day individually. Otherwise you risk undesired growth.
2. Each sow has to be undisturbed during feeding. Concentrate mixture for pregnant sows is strongly rationed and there are more than 100% differences in eating speed.
3. All sows of one compartment should eat together. All sorts of electronic feeding machines with no simultaneous feeding cannot overcome this great disadvantage.

### **Feeding Stalls are First Class**

It is not surprising that only feeding stalls with self-locking or manual-locking doors fulfill the demands of the sows as well as the claims of managers and staff. The self-catch system has many advantages. It enables sows to have contact with other animals whenever they want, but have more privacy when eating. First of all, the system is quiet and animal friendly. Also pregnancy scanning is easier as sows can be fixed with little effort. Often the bile is empty before they start eating again and go into their stalls, so the diagnosis is generally accurate. Sows are very calm during feeding in their stalls. Feeding stalls are very common in the Netherlands and uncommon in Denmark, which is one reason for the big differences in sow losses. Feeding stalls are well suited for little as well as for very big units. People use them in conventional and organic farms. Staff with lower training can work more easily in comparison with electronic feeding systems (Table 1).

## **STRATEGIC MANAGEMENT MEASURES IN HUSBANDRY**

In respect of housing conditions, three aspects are very important for health, performance and sustainability. These are stable social hierarchy, gut fill and lying comfort.

### **Stable Social Hierarchy**

Sow aggression is a heritable trait and it may be possible to select against it. But the environment and management still play an important role in how sows behave. When mixing sows, a new social hierarchy has to be found. To prevent negative influence on claws, it is favourable to give

during the first two days of mixing enough space (5 m<sup>2</sup> = 55 ft<sup>2</sup>) and solid floor with deep straw. After staying in such an “area” the sows have built up their hierarchy to a high extent. For further stabilizing of this hierarchy it’s necessary to offer suitable conditions in their pens in respect to feeding system, gut fill and adequate lying comfort.

**Table 1. Qualification of 5 feeding systems in respect for highly prolific sows.**

Feeding system	Individual	Undisturbed	Synchronal	Behaviour	Evaluation as a whole
Slowfeeder	No	Yes/No	Yes	All right	😐
Quickfeeder	No	No	Yes	Too quick	😐
Liquid feeding without stalls	No	No	Yes	Too quick	😐
Electronic feeding	Yes	Yes/No	No	Not species-appropriate	😐
Feeding stalls	Yes	Yes	Yes	Species-appropriate	😊

### **Gut Fill: “Only a full sow is a peaceful sow!”**

Highly prolific sows are able to eat daily during lactation more than 8 kg (16 lb) of concentrate. Therefore you can imagine, that dry sows can’t reduce this quantity to 2.5 kg (5 lb) without any problems. With single housing there was no great problem to handle permanent hungry sows. But it’s greatly different in group housing. To keep sows peaceful they have to be full. Otherwise you’ll get problems like restlessness, injuries of skin, vulva, claws, fertility, and so on.

### **Adequate Lying Comfort**

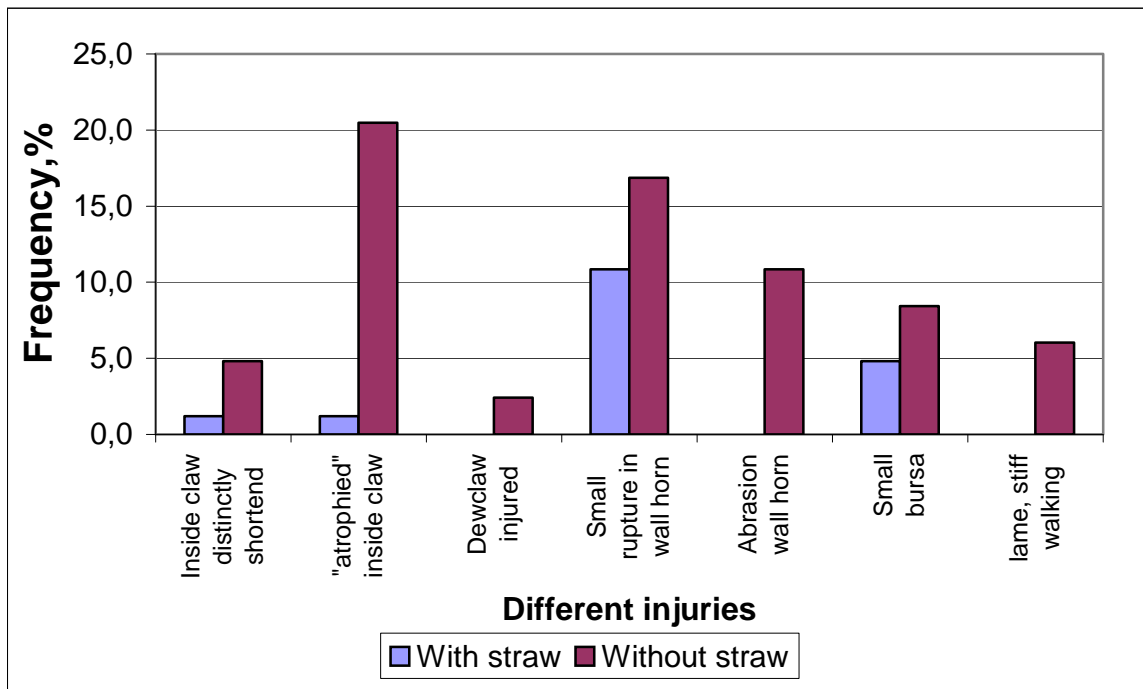
Most of the time sows are resting. Therefore you have to offer adequate facilities to keep them warm in cold weather, i.e. insulation and/or heating of building or floor in lying area. During hot weather sows need appropriate cooling. Therefore it’s for highly prolific sows performance-suppressing to lie only on slats. The resting area has to be at least solid and insulated, i.e. in housing with cold climate. Much better is sufficient and dry bedding material.

Since the skin temperature of sows is about 28°C (82°F) - like in human beings - all lying materials have to make sure, that those skin temperatures can be maintained easily. Table 2 shows the problem, that thin sows are not able to heat slats to the necessary 82°F. Such sows are more exposed to risks like colds, cystitis, and so on. Furthermore they lie more on their stomach and are not able to sleep in relaxed lateral position. Stomach lying is a main cause of leg and claw injuries. Dry straw in the lying area is a very good method to keep claw injuries on a low level. (Figure 3).

**Table 2. Floor temperatures in the sow lying area with regard to body condition score.**

Location of the test point	Temperature	Temperature
	°C	°F
6 ft above slatted floor	20	68
Near slatted floor	18	65
Slatted floor with thin sow	17	63
Slatted floor with normal sow	19	66
Slatted floor with thick sow	24	75
Insulated or littered floor with thin, normal and thick sows	28	82
Skin of sows	28	82

**Figure 3. Comparison of pens with or without straw in the lying area in respect of different parameters of claws. (Hahn, Boxberg, 2009)**

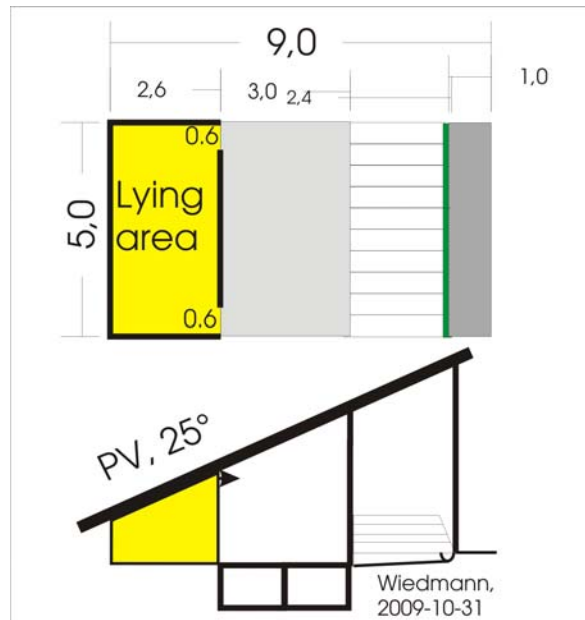


In Figures 4 and 5, you can see examples for pregnant sows with different areas for lying, feeding and dunging. Floor and walls of the lying area are insulated.

**Figure 4:** Structured housing for pregnant sows in a double-row with different insulated areas.



**Figure 5:** Structured housing for pregnant sows in a single row with photo-voltaic roof to the south (data of lengths in meter)



## **SOME ASPECTS TO GILT MANAGEMENT**

First of all: Gilts are the “crown jewels” of each unit. Therefore, do not house them like finishers. A great deal of problems with today’s sow herds are the results of not respecting the needs of the gilts in the past.

### **Guidelines for Gilts**

- Gilts should be kept in little groups of about 6 to 10 animals
- Offer them much space (at least 3 m<sup>2</sup> = 30 ft<sup>2</sup> per gilt) for their own fitness training (heart, muscles and fibers, immunity)
- Give them each day a lot of employment, a full gut and fresh air
- Lying areas must have different insulation (straw area and concrete area)
- Look for claw abrasion and strong, clean legs
- Keep gilts separate but not too far away from your unit
- Emphasize a firm human-animal-relation and talk to them each day
- Serve them not before they are 8 months old
- Adapt them to feeding stalls
- Contact them to boars
- Put them to the sows after 1<sup>st</sup> litter at the earliest or even better after 2<sup>nd</sup> litter

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