

The ideal pen size for loose-housed lactating sows



Vivi Aarestrup Moustsen

Pig housing



Piglets with a sow in a loose housed farrowing system in the Netherlands. Photo: Boerderij

As loose housing of sows around farrowing appears to be the future, the question is what system to use. Pig welfare expert Vivi Aarestrup Moustsen discusses a survey in which experts assessed the ideal pen size for sows.

A question, pig producers often ask me is: "What is the best pen for loose-housed lactating sows?" A simple question, with a much more complex answer. There are necessary pen elements and elements that are nice to have. Compare these to those of a car. All cars should have an engine and 4 wheels. The height of the car however, the colour and whether or not the seats are heated are variables.

Basic needs for farrowing pens

Basically, there needs to be a sow's length of space where the sow is lying, with an additional 50 centimeters for them to stand up. A sow's length is also necessary where the sow is standing but less than a sow's length is needed for turning.

Piglets need a comfortable lying area, preferably covered to support a warm microclimate in the creep. The possibility to run also needs to be present, as well as a cooler microclimate for sows. Caretakers should have easy access to the piglets in the creep area, so the pen should be designed in such a way that it is possible to reach them without entering the pen.

Important elements also include a slurry system, such as scrapers which

- can handle the nest building and enrichment materials used;
- allow for frequent emptying – like scraper systems; and
- have a limited surface area.

And, of course, the feed trough should be positioned in such a way that it is easy for the sows to reach. In nature, this is on ground level. It should also be easy for caretakers to check, and water should be available in abundance to ensure milk production.

Complexity: Sows, piglets and caretakers

In short, complexity arises because there are several 'stakeholders': sows, newborn piglets, growing piglets and caretakers. There are also aspects of animal welfare, economics and environmental impact to take into account. In addition, there are personal experiences and preferences, issues such as distance and space, and questions of quality and quantity.

Expert survey

In a survey, [the Danish pig research organisation SEGES](#) asked 8 international experts to assess pen functionality in relation to sow and piglet behaviour, ease of working for caretakers and impact on the environment. The experts answered 25 questions about a combination of 5 areas of farrowing pens, the dimensions of the farrowing pens and about floor profile and design.



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For dimensions are essential decision

The basis for this survey was that one of the first and most essential decision pig producers must make when establishing farrowing pens for loose sows, is what the dimensions of the pens should be, such as described in a scientific publication in *Frontiers in Veterinary Science* by Emma Baxter and others in 2022. A decision that cannot be changed once construction has started. It is therefore very important, but there are few tools to support it.

The experts all had an interest in and knowledge of animal welfare, as the focus was on the sows' and piglets' opportunities to perform specific behavioural elements. It cannot be excluded that the answers would be different if the respondents had been pig producers, production or construction consultants or contractors.

Zooming in on sow behaviour

In pens for loose-housed lactating sows, where the area of the pens was up to 6.0 m², the experts assessed that it was less easy for the sows to perform selected behavioural elements. Access for and to piglets was affected. This was especially the case if the pens were 190 cm or less in width. The experts found that it was more difficult for the sows to turn around. If the pens were 270 cm or less in depth, the experts estimated that the space behind the sow was limited when the sows were confined for farrowing.

For areas larger than 6.0 m², the experts found that there were minor differences between pen layouts in relation to the sows' and piglets' ability to perform selected behavioural elements.

It should be noted that in the survey, rectangular pens with an area larger than 6.0 m² all have a depth of at least 3.0 m and a width of at least 2.1 m. Thus, there was no distance shorter than a sow's length and no dimensions that could be expected to limit the sow's movement.

Developing a tool for pig producers

Following the survey, a practical tool was further developed to give pig producers and other stakeholders support in the decision-making process in designing a farrowing pen for loose sows. It includes a checklist with 30 questions related to the design and the functionality of the pen. The checklist comes with a sow and her litter made in cardboard scale 1:20.

[A video at SEGES.TV illustrates the principle](#) (choose English subtitles).

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