

## Question to EURCAW-Pigs

30 June 2020

### Question

Received: 20 May 2020

EURCAW-Pigs received the following question from a welfare policy worker of one of the Member States:

*What is the current scientific knowledge on the ability of sows to handle differences in height, in particular when group housed sows are stepping backwards?*

### Answer

Several EURCAW experts contributed to the response below. The EURCAW secretariat did the final editing, and may be contacted for queries: [info.pigs@eurcaw.eu](mailto:info.pigs@eurcaw.eu).

In short, the answer is:

Reverse-exits out of stalls can confront sows with challenges and risks concerning animal welfare issues. If sows must reverse-exit stalls, the following aspects ought to be considered:

1. **Farm-management:** All sows should be able to reverse-exit their stalls without being blocked by e.g. higher ranking sows. Thus sufficient space in the unobstructed area need to be provided
2. **Unobstructed floor area:** The area in and behind the stall must enable the sow to move comfortably during reversing and after having reached the communal area. From an animal welfare perspective, it is therefore preferable that the pen is constructed with at least 3-4 metres open space behind the stalls to allow sows to turn around unhindered. The minimum legal requirement for the width between the stalls is 2.8 m. The height of the step must be attuned to the size of the sow to allow stepping up and down.
3. **Floor design:** To prevent injuries and lameness, the surface of the floors involved in reverse-exiting stalls shall not be slippery and shall give the sows grip to prevent them from slipping and falling. Deep straw bedding behind the stalls can reduce claw-injuries.
4. **Animal Based Measures** should be used to assess the impact of step height and space allowance on sows' welfare, e.g. lameness, slipping or falling and vulva lesions. Increased prevalences of these specific indicators indicate problems.

### Background

There are no scientific findings on the effects of walking backwards in combination with stepping down to a lower level for sows (pigs). However, this question, in part, can be addressed by taking into account scientific knowledge on the natural behaviour and senses of pigs.

Sows usually locomote by walking, trotting or galloping forward whereas walking is the most prevalent type of locomotion. Pigs orientate in their surroundings mainly by olfaction, hearing and vision. Their olfactory senses are well developed and they use them to situate themselves by sniffing and smelling. They have a panoramic vision of 310°, a binocular vision of 35-50°, and a

blind point at the rear end (Fig. 1). Their vision is less well developed than their sense of smell (Dalmau et al., 2009).

Reverse-exiting and stepping down to a communal area can be challenging for a sow, seeing that she cannot apply these senses while reversing and, thus, the sow cannot easily anticipate dangers and obstacles at the rear end within the blind spot. However, experience has revealed, that sows can learn to step backwards and down under adequate conditions.

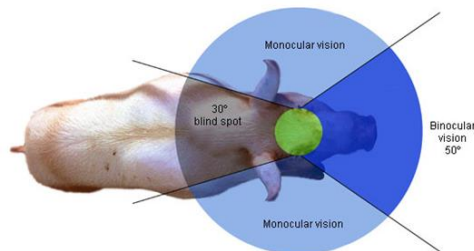


Figure 1. Monocular and binocular vision zones of the pig.

Fig. 1 : Dalmau et al., 2009.

A major challenge for entering and exiting stalls is interactions between higher and lower ranking sows within the group. Given that other, in particular higher-ranking, sows can position themselves behind certain stalls and blocking the exit, a sow intending to leave the stall may cease exiting due to fear. Studies carried out by Edwards et al. (1988) assessed the behaviour of sows in group housing systems similar to the one presented with the difference, that sows did not have to step down. According to Edwards et al. (1988) sows prefer to walk-through stalls in comparison to reverse-exiting them, as the latter can be associated among other things with vulva-biting.

Once the sow has stepped down into the communal area behind the stall, the space provided shall allow the sows to stabilise, turn on the lower level and continue to walk freely in the direction desired. Lack of space behind the stall can increase the risk of higher ranking sows blocking lower ranking animals once they are in the communal area. The legally required minimum space per sow is 2.25 m<sup>2</sup> and with a width of at least 2.8 m of the unobstructed area behind the stalls. Studies have revealed that on farms with larger space/sow, the farrowing rate is higher and the removal rate is lower. More space can possibly result in a higher profit (van der Peet-Schwering et al., 2009). Furthermore, experience has revealed that farms with a width of >3m between two rows of stalls for group-housing with free access stalls increases the farrowing rate and lowers the rate of sow mortality. Therefore, it is recommended that the unobstructed floor area behind the stalls is at least 3-4 m.

Steps may be difficult to overcome for sows if they are too high and/or if the surface is uneven or slippery. Slipping and falling while descending increases the risk of claw lesions and lameness representing significant welfare concerns for group-housed sows. The reported worldwide prevalence of lameness among gilts and sows generally varies from 5-20%, depending on the assessment method, housing system and pig breed (Nalon et al., 2013a; Pluym et al., 2011). Providing straw as bedding can positively affect welfare, because it can reduce claw lesions resulting from aggressive interactions. Moreover, straw offers animals the possibility of exerting explorative behaviour, which prevents development of stereotyped behaviour.

Despite these risks for negative effects on sows' welfare, reverse-exiting including a step down out of stalls to the communal area can go smoothly if a variety of factors is taken into account. As the standard of animal welfare in this form of housing depends on a variety of different factors, the suitability should be evaluated by assessing animal-based indicators covering the described risks. These indicators may include lameness, claw lesions, slipping and falling, vulva lesions, and skin lesions (see: <https://www.eurcaw.eu/en/eurcaw-pigs.htm>).

### *Conclusions*

Reverse-exiting stalls with a step down are challenging for sows in group-housing systems. The outcome for animal welfare depends very much on the farm-management and the attention to each individual sow. Reverse-exiting can increase the risk of dominant sows blocking the exit and/or of vulva-biting. Stepping backwards without the possibility for visual control can increase the risk of health problems such as claw lesions and lameness, especially if steps are too high and if floors are slippery or uneven. Deep straw bedding behind the stalls in the communal area can reduce these risks. A restricted amount of space behind the stall in the communal area may make it more difficult for the sow to orientate and move on after stepping back. Under optimised circumstances, such housings can function without significant animal welfare issues. However, negative effects on sows' welfare should be evaluated by assessing animal welfare indicators, e.g. lameness, slipping or falling and vulva lesions. Increased prevalence for these specific indicators in respective housing systems indicate problems. In addition, challenge to exit stalls backwards can increase depending on body weight and lameness.

### **Relevant references**

Edwards, S.A., Armsby, A.W., Large, J.W., 1988. Effects of Feed Station Design on the Behaviour of Group-Housed Sows Using an Electronic Individual Feeding System. *Livestock production Science*, 19. P. 511 – 522.

Dalmau, A., Llonch, P., Velarde, A., 2009. Pig vision and management/handling. [https://www.pig333.com/articles/pig-vision-and-management-handling\\_981](https://www.pig333.com/articles/pig-vision-and-management-handling_981)

Nalon E., Conte, S., Maes, D., Tuytens F.A.M., Devillers, N., 2013. Assessment of lameness and claw lesions in sows. *Livestock Science*, Vol. 156, Issues 1-3, Sept. 2013, pp. 10-23. <https://doi.org/10.1016/j.livsci.2013.06.003>

Pluym, L., Van Nuffel, A., Dewulf, J., Cools, A., Vangroenweghe, F., Van Hoorebeke, S., Maes, D., 2011. Prevalence and risk factors of claw lesions and lameness in pregnant sows in two types of group housing. *Veterinarni Medicina*. 56(3). p.101-109.

Pluym, L., Van Nuffel, A. and Maes, D., 2013b. Treatment and prevention of lameness with special emphasis on claw disorders in group-housed sows. *Livestock Science*, 156, pp. 36-43.

Van der Peet-Schwering, C., Hoofs, A., Soede, N., Spoolder, H., Vereijken, P., 2009. Group housing of sows during early gestation. *Livestock Research Wageningen*. Rapport 283. P. 45.