Farrowing Systems for Sows: Are Farrowing Crates really the Best Way?

Some studies suggest that free-housing systems may allow sows to achieve higher rates of piglet survival.

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Introduction

Farrowing crates designed to reduce piglet crushing (Yun *et al*., 2013) are widely used in pig farming. Due to the dramatic size difference between newborn piglet and sow, crushing is one of the greatest mortality risks piglets face (Weary *et al*., 1996). Farrowing crates restrict the movement of the sow and thus reduce piglet mortality postpartum (Weary *et al*., 1996), but the use of farrowing crates is controversial and there is growing pressure to abolish them due to their impacts on sow welfare (Baxter *et al*., 2011; Yun *et al*., 2013). Studies have shown that confining the sow in a farrowing crate limits her performance of a range of nesting behaviours and results in the emergence of stereotypies (such as chewing on pen fittings) (Anderson *et al*., 2014; Hales *et al*., 2015). The principal argument for use of farrowing crates is that piglet survival postpartum is improved when compared to loose-housing systems (Hales *et al*., 2015), so we need to evaluate the effectiveness of alternative farrowing systems (Baxter *et al*., 2011).

Discussion

A recent study stated that little research has been conducted into the temporary confinement of sows postpartum and aimed to determine whether the confinement of sows from Day 114 of gestation to Day 4 of lactation had any effect on piglet survival (Hales *et al*., 2015). Four treatment groups were used with variations in housing before and after farrowing: confined/confined (CC, n=30), confined/loose (CL, n=32), loose/confined (LC, n=28), and loose/loose (LL, n=30). For example, the CL treatment group confined sows in crates before and during farrowing, but did not confine them during the first four days of lactation. Following Day 4 of lactation, all sows were loose housed until weaning (Hales *et al*., 2015). The results of this study showed that temporary confinement caused a reduction in piglet mortality, suggesting that temporary confinement of the sow would be beneficial to piglet welfare while limiting the negative impacts on sow welfare.

However, it is important to consider that when housed in a less restrictive environment, maternal behaviour is very important in the survival and health of piglets (Liu *et al*., 2013). The mortality of piglets varies significantly between sows within the same herd, and this may be explained by maternal behaviour (Andersen *et al*., 2014). For example, it has been shown that sows with lower piglet mortality spent longer periods lying down and also showed more nose contact with piglets around postural changes. Additionally, there were significant differences shown in nesting behaviour (NB) prior to parturition. An association was made between higher levels of NB and lower levels of crushed piglets (Andersen *et al*., 2014). Andersen *et al*. (2014) conducted a study to investigate NB, postural changes and the overall activity budget of gilts in pens compared to crates. A sample of gilts (44 gilts) was videoed from Day 110 in gestation to four days postpartum. These gilts were all provided with nesting materials and either housed in a farrowing pen or crate. The results of this study indicated that NB was higher in pens compared to crates, and pigs housed in crates showed increases in behaviours that would suggest frustration, such as stereotypies (e.g., chewing on crate fittings). This study also demonstrated that sows restless before farrowing tended to crush more piglets, probably due to increased frequency of behaviours such as sitting in quick flops when entering a resting position. Andersen *et al*. (2014) also concluded that providing straw to sows in farrowing crates does not compensate for lack of space and loss of freedom of movement. Sows housed in crates displayed more behaviours related to frustration and restlessness (Andersen *et al*., 2014).

Another study conducted by Yun *et al*. (2014) investigated the influence of providing nesting materials and space prior to parturition on NB and on circulating oxytocin and prolactin concentrations. It is suggested that NB could be triggered by a rise in prolactin concentration prepartum. Restriction of NB (as is done in crate housing) could lead to a decrease in circulating plasma oxytocin concentration. The release of oxytocin is suggested to lead to an increase in prolactin concentrations, and this would play an important role in maternal behaviours (Yun *et al*., 2014). The farrowing environments in this study were: housed in crate (farrowing crate closed) with a bucket of sawdust; pen (farrowing crate opened) with a bucket of sawdust; and pen (farrowing crate opened) with abundant nesting materials. Plasma samples were collected and assayed for oxytocin and prolactin on day –3, –2, and –1 (day 0 being parturition). All sows (n=35) were

video recorded from 18 hours prior to parturition until the birth of the first piglet. This allowed researchers to assess the display of NB such as pawing and rooting (Yun *et al*., 2014). A postpartum carefulness score was also used to assess the maternal behaviour of sows postpartum. The study concluded that the total duration of NB was positively correlated with postpartum carefulness of sows. Additionally, elevated oxytocin and prolactin concentrations were recorded in these sows. These results support the conclusions of a previous study conducted by Yun *et al*. (2013) that determined provision of abundant nesting materials to sows prior to parturition could increase plasma oxytocin concentrations, which would result in improved nursing performance and maternal behaviours during early lactation.

Conclusion

The restriction of natural behaviours in a farrowing crate has a negative impact on sow welfare, but does result in lower piglet mortality (Andersen *et al*., 2014). Balancing sow and piglet welfare can be difficult. This new research indicates that providing space and nesting materials that allow sow maternal behaviours may decrease piglet mortality and improve sow welfare. Further studies such as those carried out by Andersen *et al*. (2014) and Yun *et al*. (2014) should be undertaken using different breeds of pigs, to demonstrate whether a free-housing system for farrowing is more beneficial to commercial piggeries. As these studies suggest, the use of free-housing systems may allow sows to be more productive (i.e., have higher rates of piglet survival).

References

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