

Farrowing Crates: Our Farm Past *and* Future?

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Fifty years ago, swine production was a lot different than it is today. Today, swine are being produced in much tighter confinement, which maximizes production and ultimately profit. As more people educate themselves about swine production, there seems to be an increasing level of concern for swine welfare in terms of environmental conditions and production practices.

Perhaps one of the most controversial topics today in swine industry revolves around farrowing crates. Farrowing crates were introduced for use in the 1960s that enclose sows during the end of their gestational period but mostly during nursing of their young (Mickley, 2010). The farrowing crates are 2'x2'x4' in size (Rohde *et al.*, 1989) which is not much larger in any dimension than the pregnant or nursing sow. But what exactly are the welfare and production issues of farrowing crates? Should farrowing crates continue to be used in United States swine production?

According to Kyriazakis and Whittemore (2006), there may be some benefit of housing the sows in the crates from the point before farrowing up until weaning, but the most critical time period is during the first three days following parturition. At least 50% of the piglet crushing incidents occur during this time. Kyriazakis and Whittemore (2006) go on to explain if sows are not placed in the crates during this crucial time frame, there is a risk of a 10-25% mortality rate per litter. These mortality rates can be devastating to a swine production facility.

According to Sybesma (1981), when the use of farrowing crates began in 1960, sows were fed *outside* of confinement. Today, crates have eliminated this step altogether when feeding is accomplished with troughs *inside* of the crate. In addition, there are now partly and

fully slatted floors for excrement which reduces the amount of human labor needed to manage sows. Taking away the straw for bedding that was once a production practice in the 1960s is also common. Most management systems no longer use straw bedding (Sybesma, 1981). These changes have saved valuable time for production facilities which ultimately drives the cost down for swine products.

Management Solution of Farrowing Crates and Potential Issues:

According to Blackwell (2004), there are ideas that both support and question the use of farrowing crates in the swine industry. As a point of support for farrowing crates, there is usually feed available to the sow at all times eliminating the need for her to ever leave her young while they nurse. In addition, and perhaps the strongest point in support of farrowing crates, is the idea that such a crate can eliminate crushed piglets (Blackwell, 2004). Researchers in the United Kingdom have concluded that there has been an approximate 95% survival rate of piglets when farrowing crates are used with sows compared to other traditional systems such as group housing and outdoor housing (Mickley, 2010). A farrowing crate eliminates much of the need for a sow to get up and turn around which drastically lowers the chances of her crushing one of her young. However, farrowing crates do not allow the sow to lie closely within skin to skin distance next to her young as she might desire. While that might be potentially emotionally challenging for her, it certainly also lowers crushing rate (Varley, 1995).

Temperature Requirement of Piglet and Sow Differ Significantly:

The ideal ambient temperature in a farrowing house can range between 50° to 60°F (10° to 15.5°C) (Bundy *et al.*, 1984). Temperature requirement needs for sows and piglets are not

identical. In a farrowing operation, there are zones called zone-cool and zone-heat to provide proper temperature for the sow and piglets, respectively. The zone-cool for sows range from 60-80°F and zone-heat for the piglets range from 90-100°F (McGlone and Pond, 2003). The temperature needs do not even overlap one another which poses an obvious production issue for producers to properly meet those important requirements to maintain the health of both mother and babies. Because the piglets have such a warmer temperature requirement, they often attempt to huddle closely under the bellies of their mothers for warmth which can lead to a crushing incident (Varley, 1995).

Many swine producers adopt the practice of using heating lamps to help raise the temperature for the zone-heat areas for the piglets. Although the sow and piglets are somewhat close together, there is a heating lamp farther away from the sow to warm the piglets and to avoid overheating the sow. The crate's most obvious use is to help prevent crushing. These heat lamps, in essence, do the same. By providing artificial heat with a 250-watt bulb lamp, the piglets are very likely to be attracted to the source of heat and move farther away from their mothers to keep from being crushed. Electrically heated concrete slabs of flooring are also common in practices which provide an area of higher warmth than that of their mothers (Bundy *et al.*, 1984).

Lack of Mobility May Lead to Serious Problems:

There are also many points of disagreement with farrowing crates and their use in the United States swine industry. There is big concern with animal welfare activists for the lack of mobility in farrowing crates. Movement is restricted and sows are confined for long periods of time (a few days prior to farrowing plus between 16 and 28 days beyond that to account for

weaning time of the piglets) (Blackwell, 2004). There may be repercussions that result from such inactivity. Laying and standing in one common place for weeks can destine sows to muscle weakness, joint problems and, in the worst case scenario, damaged mobility (Mickley, 2010). In addition, both sows and gilts are potentially already predisposed to having chronic arthritis issues which might lead to lameness as well. Arthritis may also lead to secondary issues, causing even less mobility (Blackwell, 2004).

Is the Sow Distressed by Prevention of Expressing Her Maternal Instincts?

Another point of discussion is that sows may possibly face emotional distress with the use of farrowing crates. Morris (2003), an author in the United Kingdom, believes motherly interaction with their young is a very important activity with most mammals. Swine are not an exception. Farrowing crates allow the piglets to move around freely and nurse, but the mothers are restricted from moving around, interacting, playing, and sleeping close with her piglets. Although this information is researched in the United Kingdom, maybe we can apply it to understanding the swine industry in the United States as well.

But maybe not all sows are meant to be good mothers. And maybe we cannot justify the use of farrowing crates to prevent crushing of piglets if some sows simply do not have the most superior maternal instincts to begin with. According to Gill *et al.* (2004), addressing piglet mortality is more correlated to both direct *and* maternal effects. Meishan sows had much higher pre-weaning survival rates than compared with the Dutch Landrace breeds. This would suggest that some swine breeds are more appropriate and suitable to be superior mothers.

Another study in Nebraska, Selection for Maternal Behavior in Mice – Direct and Correlated Responses, involved mice and looked at genetic variation of breeds by both high and

low levels of Maternal Care Index (MCI). This model was used to help evaluate piglet survival rate through the genetic selection in sows. Nursing mice breeds with High Maternal Care Index (HMCI) and Low Maternal Care Index (LMCI) were studied and were found to spend 81% and 64% of her time involving maternal duties, respectively. These duties included: nursing, licking pups, retrieving pups, nest building, and resting with her pups. Swine breeds are also often categorized into “maternal breeds.” This study made just that point: certain breeds by genetic selection show much better potential of giving far more superior care than others (Chiang *et al.*, 2002). Although the mice MCI model cannot be 100% correlated to swine, it is definitely a start to prompt more research programs such as these to determine its feasibility. So maybe we really cannot justify the use of farrowing crates to prevent crushing pigs if certain breeds are more predisposed to crush their young from lack of high maternal care provided by genetic selection. It definitely deserves contemplation.

Telos May Be of Concern:

Perhaps of central importance to the farrowing activity are the telos of nesting behavior. According to Varley (1995), in natural settings without confinement or farrowing crates, sows (wild, feral, and domestic) will build intricate and complex nests about one day prior to parturition of their young. Varley (1995, p. 271) also gives the order of activities which usually revolve around:

1. Site selection
2. Excavation by snout
3. Collection of small materials (grass, leaves, and small sticks and branches) from the surroundings
4. Lining the nest with these small materials by rooting, pawing, and moving in a circle
5. Collection of bigger branches and arrangement of these over the nest
6. Covering the overarching branches with grass and other fine materials

The use of farrowing crates clearly thwarts any of the above activities. It is simply not feasible, in a crate, to carry out any of those nesting activities. Is it fair to hinder nesting with farrowing crates if the sows have access to nest building materials? There is a higher incident of piglet survival when using farrowing crates, but what about the effects of sow stress response for lack of ability to carry out her nest building instinct? It may be ironic that farrowing crates can actually be associated with *mortality* of piglets. Stress that may be associated with farrowing crates can lead to an increase in catecholamine secretion by the adrenal gland which can upset oxytocin levels in the body and can lead to early uterine contractions and premature birth of piglets. Milk letdown and lactation yield and quality are also commonly affected negatively by the possible stress of farrowing crates (Varley, 1995).

Sow Versus Pig Behaviors:

It is important to make the distinction between *sow* (a mature female) behavior and *pig* (as a whole species) behavior. They are actually quite different. The ancestor of today's pigs spent the majority of its life in search for food. He or she rooted around for low plants, roots, and insects. The pig was once a "forest-dwelling" species (McGlone and Pond, 2003).

Today, the behavior of pigs has changed. They eat several meals per day and will drink water from several different locations such as streams, cups, and bowls as well as various other locations which they might be presented with. According to McGlone and Pond (2003), pigs may actually have a preference to drink dirty water, especially if that water is more easily accessed. Pigs are also accustomed to urinating and defecating in specific locations and away from feeding locations and other pig mates. If they are given a large enough environment, facility managers have reported that pigs will actually separate their areas according to use:

feeding, drinking, resting, urinating, and defecating. Pigs also spend approximately 10% to 50% of their time walking, chewing, and rooting for food and other objects. Pigs spend a significant portion of their time chewing and rooting in soil, but in production practices, they have been found to carry out this behavior on most any material they have access to, such as concrete flooring and feeders (McGlone and Pond, 2003).

There is tremendous difference between sow and pig activities. In farrowing crates, sows spend 17% of their time nursing; 7% feeding; 10% standing, sitting, and drinking; and 66% of their time lying and not nursing. This percent of inactivity is huge compared to pigs. 10% to 50% of their time is spent walking, chewing, and rooting for food and other objects as mentioned before (McGlone and Pond, 2003). This presents a question: are these differences in percentages due to the management practices and use of farrowing crates? Or are the variations more likely to be attributed to the physical state of the sows (their larger size) and their maternal responsibilities? Many researchers have a rationale for both explanations.

The question remains unanswered: should farrowing crates continue to be used in United States swine production? There are many obvious points to consider when making an educated decision both for successful swine production *and* the welfare of sows. That's what makes it harder to decide, though. Having to take into account so many angles of viewpoints can conceal an easy solution.

There is no current ban on farrowing crates in the state of Oregon. In my opinion, banning farrowing crates would not be valuable to the swine industry. But clearly, these crates force us to question welfare issues and the well-being of sows. As Kyriazakis and Whittemore (2006) suggested, "The sow undoubtedly has her **freedoms and rights** of movement curtailed in a farrowing crate..."

What about the idea that animals *don't* have rights but they *do* have welfare issues and concerns? Saying an animal has rights, in my opinion, means equating human rights to animals. A lot of human rights just wouldn't apply to animals. We do have the responsibility to determine what's right and wrong for animals. They *do* have welfare issues.

The United Kingdom's agricultural industry has banned sow farrowing crates. The Farm Animal Welfare Council of the United Kingdom has published Welfare Codes of Practice in the swine industry. It created a positive standpoint on pig welfare and many countries outside of the UK have adopted its ideas: (Ensminger and Parker, 1997, p. 383).

1. Concern that total sales of pig products may fall if the buying public becomes unhappy with the way in which the animals are cared for on the farms.
2. The possibility that pig products identified as having come from livestock farms with especially high welfare attributes (outdoor production, straw-based systems, loose housing, low density stocking etc.) may command higher prices.
3. Legislation

Many animal industries are influenced by public perception and awareness. If the public becomes concerned for the welfare of swine, the sales could certainly drop. If swine production is being questioned about having "higher welfare attributes," swine sales might possibly have grounds for higher pricing.

What does it really mean to have "high welfare attributes?" As Ensminger and Parker (1997) define this, having higher attributes might include outdoor production. Kyriazakis and Whittemore (2006) might disagree with that belief. Kyriazakis and Whittemore were more ready to judge outdoor housing as predisposing sows to aggression, having a variable feed supply available to them, low environmental control, exposure to severe weather conditions of all types and a lower capacity to administer medications, if necessary. So is outdoor production our solution to replace the farrowing crate? Some might argue it is not in the best interest of the sow.

It seems like a very complex task to discontinue the use of farrowing crates in the United States in the following years. I have the strong impression that it is highly unlikely that the use of farrowing crates in all parts of the United States will be discontinued. According to Mickley (2010), piglet survival rates are proven to be overwhelmingly higher (95%) compared to non-confinement housing practices such as outdoor production. Sows have no pen mates which lowers aggression and disease occurrence. But with some of the shortcomings of farrowing crates, it is important to review those faults.

I see important validity in reviewing farrowing crate limitations and faults. The sow does have to forfeit some of her normal telos and activities. She is not able to be as close as she might wish to be with her young. She cannot stretch her legs to the extent she might desire. In fact, she has no choice whatsoever in the reproductive responsibility she has been assigned to at the beginning of her existence.

Ten, twenty, and even thirty years down the road, the use of the farrowing crate might change drastically. The consumer ultimately sets the rules and regulations for animal welfare and can choose to buy or refuse a product based on their concern for animal welfare. In the meantime, we must create good management practices with farrowing crates. As production managers, we need to be able to incorporate both the physical and life quality considerations for the sow. We need an understanding of sow behavior in order to accomplish this. We also need experience and skill to accomplish this feat. While it may be unfeasible to ban farrowing crates in all of the United States, we still need to have these considerations if we are to continue the use of farrowing crates.

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