

Observing Swine Behavior To Lower Piglet Mortality

Is motherhood going downhill—among sows, at least? Is that one reason why piglet mortality has increased lately, despite an overall downward trend?

Research and good animal management have significantly improved piglet survival—mortality is down from 35 percent in 1924 to 13 to 15 percent last year. But those losses, from \$130 to \$330 million a year, are still a significant national problem.

In this country, about half of piglet deaths are from being crushed by their mothers.

Donald C. Lay searches for reasons as he watches 2-pound piglets get crushed when their half-ton mothers lie down and roll over for a good nap.

Even if he slaps a sow lightly on the back to alert her and save some piglets, others rush in, only to be crushed as she lies down again. The sows do this despite the deafening cries of their doomed piglets.

Lay is ARS' latest and second farm animal behaviorist, after Julie Morrow-Tesch, whose work is described in the article on page 4. Their research is part of the ARS National Program "Animal Well-Being and Stress Control Systems," begun in 1994. The program aims to find solutions to problems like piglet mortality through observing animal behavior.

Observations and research show that the first day of life is when most piglets are crushed. Lay has watched some sows lie down peacefully—and almost continually—for 11 1/2 out of 12 hours after giving birth. That almost guarantees piglets will make it through half of their most vulnerable period. Why then, Lay wondered, are other sows so restless that their movements endanger piglets in those first 12 hours?

Seeing sores on the sows' hindquarters and legs, Lay concluded that the flooring was uncomfortable to them. He gave them an analgesic (pain-killer), and they rested peacefully.

Lay sees this as evidence that research on more comfortable flooring designs should help. He plans to test any possible solutions like floor design against the industry data, to check and adjust for practicality. For example, any new floor design has to consider pig rooting behavior—anything they can get their nose under they can destroy.

The causes of piglet crushing are a big unknown. There are few answers and many questions.

Lay is focusing on why sows don't seem to hear their piglets' piercing squeals as they lie on them. Are the sows confused because they hear other piglets squealing from other nearby litters? Or are these sows genetically programmed to be insensitive?

It may be a little of both; Lay has seen sows who are very alert to the cries of both their litters and others.

Modern methods of raising sow families indoors in close proximity to other families could be part of the problem, according to observations and research. Not only do animals like to be alone when giving birth, but also the cries of other litters may desensitize sows to cries of their own piglets.

One thing Lay noticed is that the piglets, nearsighted and awkward as they are at birth, can find their mother's udder within minutes after birth. Julie Morrow-Tesch's experiments with piglets in a maze showed that it was the mother's milk scent on the udder that guided the piglets.

Lay tried to figure out what it would take to entice piglets away from their mother—and the crushing danger. He noticed the piglets ignored the warmth of a heat lamp and preferred mother's warmth and milk during the first critical 24 hours of life.

So Lay designed artificial udders and covered them with cloths that had the scent of the mother's udder on them. The artificial udders worked, but large-scale tests are needed to see if they decrease crushing deaths.

Living quarters are an important factor in piglet mortality. Currently used farrowing crates save lives, compared to pens. The crates are designed to hold a sow during the weaning process and keep her from rolling on her pigs by forcing her to lie only straight down. In Europe, some operations use farrowing crates with a 1-foot curb barrier that allows the sow to come and go freely, whereas the piglets can't leave until they can climb the barrier, usually in a week or two.

Jeffrey Carroll's work on cold stress showed that when piglets are chilled below their desired 85°F, they become more vulnerable to respiratory and other diseases.

Lay has found that chilled piglets are prone not only to disease, but also to being crushed. This is because the piglets spend more time very close to Mom to keep warm. They're also weaker and less likely to move away from danger quickly.

Runts of the litter are also more susceptible to suffocation, because they are smaller, weaker, and more likely to become chilled.

Lay presented his findings on piglet mortality at this year's joint Midwest section meeting of the American Society of Animal Science and the American Dairy Science Association in Des Moines, Iowa.

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