

## Swine Center on Cutting Edge of Welfare

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The University of Pennsylvania's new swine center is gathering data on loose housing with computerized feeding for sows, swing-side gestation stalls and farrowing crates that convert to pens. The goal is to play a key role in the growing debate on animal welfare.

“Pennsylvania has the largest agricultural industry in close proximity to the East Coast metropolitan centers,” says the center's director, Tom Parsons, DVM. “I've always felt societal issues, such as animal welfare, could impact here first.”

The equipment is installed in the veterinary school's teaching and research facility on the New Bolton Center campus in Kennett Square, PA, and comes from Austria. Parsons and his staff are prototyping the equipment to see what will work here.

The animal welfare emphasis is focused on gestation housing and farrowing crates. The centerpiece is a computerized feeding system for group-housed sows, which Parsons says is the most unique part of the 100-sow facility. The computerized feeding station separates the loose housing area from a row of gestation crates.

“The reason the industry went to individual sow housing was to provide individual nutrition and avoid social hierarchy issues,” Parson points out. “This equipment maintains individual animal feeding in group housing, but cuts the time sows spend in crates by 75%.”

Each sow is identified by a small, round microchip implanted in an ear tag. One at a time, sows enter the feeding station through the rear gate, are recognized by the computer and begin to receive their daily feed allotment in a stainless steel bowl. When a sow is finished, the bowl retracts and she exits through a pair of front swing gates. The rear gate locks so she can eat in peace, but unlocks when the feeder bowl retracts. If she's slow to leave, a hungry sow behind her provides some incentive.

The computer tracks how much sows weigh and how much and when they eat. When a particular sow needs to be separated from the group, the computer can automatically divert her to a special pen when she exits.

The sows quickly learn to use the computerized feeder and they don't forget, says Parsons. “As they come out of the crates into group housing, they make a beeline for the feeder.”

The manufacturer of the sow feeder, Schauer Maschinenfabrik of Prambachkirchen, Austria, has been working to perfect the design for almost 20 years, says Parsons.

While individual feeding is kept intact with this system, the social structure of group housing remains. Sleeping areas are raised concrete decks with solid pen dividers. Usually, the same animals rest together. “If the wrong one tries to intrude on a social clique, there's a big ruckus,” he says. “The Europeans

suggested the solid partitions to help conflict resolution as the sows don't have to look at each other.”

Straw bedding is not an option with popular liquid manure handling systems in the U.S., but Parsons argues that sows are quite comfortable in this loose housing arrangement without it. “There's no evidence of pressure sores and the concrete is dry and dung-free.”

### **Turnaround Crates**

After weaning, sows spend about five or six weeks in gestation crates before moving to the loafing area. “Early embryonic death can occur the first 21-28 days after breeding if sows are moving around too much prior to embryo implantation in the uterus. So we like to keep them in crates during this time,” explains Parsons. “I try to emphasize competing welfare agendas. In this situation, sows are restricted from interacting with each other or (from) walking around, so we're putting embryo welfare above the welfare of sows.” Likewise, farrowing crates prioritize the welfare of the piglets, he says.

The unconventional gestation crate, made in the U.S., has hinged dividers that swing out on a chain. The swing-sided crates take up the same amount of space, but allows the sow freedom to turn around and face the opposite direction.

“It's a clever idea, but when the dividers swing out, it temporarily takes up space from the two adjoining crates to allow the animal to turn around. A drawback is there is not always enough space to maintain hygienic habits. If sows turn around, it's impossible to avoid defecating in the feed trough. Again, competing welfare agendas,” says Parsons.

“We see this as an intermediate step,” Parsons says of the sows' stay in the stalls. “Our goal is to reduce the time a sow spends in crates without dramatically changing basic animal flow or the barn's management plan. We're trying to optimize these technologies in a practical way.”

### **European-Style Farrowing**

The European-style farrowing crates are mounted on the wall at a 45° angle and can be opened to let the sow out. This design saves space since only one walkway is needed to access pigs and allows more square footage to be used for animal space. Ten to 14 days after farrowing, crates are opened to create a creep area for the piglets and allow the sow more freedom to move. The crates cost about twice as much as standard crates.

Parsons says the sows do as well or better when the crates are opened and feed intake goes up. So far, they have found some sows show stronger maternal instincts and are more attuned to where piglets are in the open-crate system.

Parsons plans to work with a genetics company to select for sows that will excel in these systems.

### **Won't Fit All Systems**

It's too soon to know how well these technologies can be adopted in the U.S., Parsons continues, since the risks and benefits are still being defined. The new facility has been in full-scale use for less than a year.

“The rate of pregnancy failure to expect from group housing or its effect on litter size are still being determined, but at this point, there appears to be nothing out of the ordinary,” he says. “In general, these technologies are exceeding our expectations.”

Parsons believes the welfare issue is a challenge the industry will inevitably face. “When designing the facility, we thought we had five to 10 years before some of these welfare issues became significant. Recent events, such as the fast-food retailers' welfare initiatives and the Florida referendum to ban gestation crates, suggest that consumer concern about animal welfare is here and now. We're finding ourselves uniquely positioned to provide information to the industry about these animal-friendly technologies.”

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