Life after the gestation crate:
A white paper on sow housing alternatives.

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While the scientific evidence remains equivocal with regard to what is the best way to house gestating sows, we are entering into an era where marketing forces will dictate how your clients house, feed and manage their gestating sows. Decisions to move their production system away from the gestation crate will undoubtedly create opportunity for you to advise your clients on what their alternatives are in a crate-less world. The good news is that there are several viable alternative options for sow housing. Each has unique strengths and weaknesses, and some are better suited than others under differing conditions or circumstances. The goal of this white paper is to familiarize you with lexicon of these emerging technologies and help identify critical attributes of each technology that contribute to when it is an appropriate alternative to the gestation crate.

The gestation crate provided several advantages that drove its ability to insure high productivity and widespread use. The gestation stall allowed for individual animal nutrition, individual animal care, and a way to manage the potential untoward effects of social hierarchy inherent in groups of pigs. When comparing crate alternatives, it is important to consider how any given approach addresses these basic needs for maintaining or improving herd productivity with group housed sows. Other important considerations are economic and include the cost of the technology, impact on labor, and feed utilization. A table summarizing these issues is provided at the end of the document.

Another critical aspect to the success of these crate alternatives is the training and re-training of employees with requisite stockmanship skills to manage sows in a pen environment. This area promises to be additional opportunity for the veterinary involvement in the industry transition.

First, to define some terms commonly used when considering group housing of sows:

Group size

Small – From 5 to 20 sows housed in an individual pen. Group is typically chosen to be of similar size and age and having similar feed requirements.

Normal - Typically 50 to 70 animals, conveniently structured to match either the size of a breeding group (or fraction thereof) and/or the capacity of a particular feeding unit.

Large – Greater than 100 sows per pen. Group is intended to be a large enough group to hinder the development and enforcement of a rigid social order. If the group size is large enough, the untoward effects of the social hierarchy is minimized or eliminated.

Group structure

Static – Group is constituted once, social hierarchy stabilizes, and the group is left intact for the duration of gestation. Both fallout and the fact that stable groups are an all-in-all out system prevent optimal space utilization of the facility.

Dynamic – Group constituency is constantly changing. Essentially it is a continuous flow system and hence space utilization can be optimized. Works much better with a large group as the turnover of animals would be disruptive to the social order if it where strongly established.

Time of Group Formation

Pre-implantation – Sows are crated after weaning and bred in the stalls. Groups are constituted as soon as animals out of standing heat. This spares sows the potential of injury if they were allowed ride each other while in heat. Fertilized eggs are still free floating as they migrate down the Fallopian tubes into the uterus prior to the onset of implantation. Any physical skirmishes that might be expected during the formation of a new group do not negatively impact the free floating embryos prior to implantation. This systems works well with large groups as the social hierarchy with in the group is minimal and any repeat breeders can simply be rebreed and left in place.

Post-implantation – Sows are crated after weaning and bred. Groups are constituted only after being confirmed pregnant at ~35 days. Implantation is complete before mixing sows, minimizing the possible reproductive negative impact. This approach is initially attractive as it leaves the basic reproductive management of the sow unaltered from a crated barn. However, fighting typically is more robust when sows are mixed after 35 vs 7 days in crates. Approximately 1/3 of the animals are housed in crates at any one time and this may not meet the expectation of the marketplace.

GESTATION STALL ALTERNATIVES

Floor feeding – Group housed sows are feed on the floor and are susceptible to disparities in body conditions. Feeding discrepancies can be lessened by feeding not every day or many times a day.

Trickle feeding – Feed is dispensed at a rate slower than the slowest eating sow can eat. Thus there is no incentive/advantage for the boss sow to leave her feeding space. All sows in a group are fed the same amount. Animals must be grouped according to expected feed intake. Some success has been obtained with housing sows in small groups, but this can be difficult to manage in large herds.

Self-catching crates (free stall) – Animals can move freely between a loafing area and a freely accessible gestation crates. The crates are self-locking and unlocking to allow the animals to come and go at their own free will. As sows tend to re-use the same stalls there is some opportunity to meet nutritional needs of individual sows. May require additional space and the crates themselves are much more expensive than other alternatives.

Electronic sow feeding – Animals are uniquely identified with a microchip that allows for computer controlled individual feeding and management. Sows can be either marked or selected for routine procedures (vaccination, preg-check, move to farrowing). Sows eat as individuals. This allows for less feed wastage and precise control of daily feed intake. ESF offers tremendous opportunity to improve the feeding and management of sows.

	Compared to Gestation Crates:				
	Individual Animal Feeding	**Individual Animal Care**	**Technology Cost**	**Feed Savings**	**Sow Productivity**
Floor feeding	no	no	less	worse	less
Trickle feeding	no	no	same	same	less/same
Self-catching crates	maybe	yes	more (>2x)	same	same
Electronic sow feeding	yes	yes	same	improved	same/more