

Managing Sows in Groups from Weaning: Are there Advantages?



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As farmers in many parts of the world adapt to meeting requirements for housing gestating sows in groups, pressure continues to reduce stall use. In most cases, stall use is permitted during breeding and for the first 4 to 5 weeks of gestation. Will further limitations on stall use impact sow fertility and production, or are there advantages to be gained from managing sows in loose housing from weaning?

Stall housing has received ongoing criticism for being behaviourally and physically restrictive. Scientific research has demonstrated that sows housed in groups can perform as well those in stalls, this combined with increasing consumer and retailer pressure to limit use of confinement

systems has led to the banning of gestation stalls in many parts of the world.

The majority of requirements for group housing requires sows in groups from five weeks gestation. Housing sows in breeding stalls after weaning until confirmation of pregnancy at around 28 days post breeding is permitted for producers to manage individual feed intake of sows and eliminate mixing aggression disrupting critical periods during estrous and embryo implantation. However, pressure may continue for the total elimination of close confinement and thus not housing sows in stalls for any period of gestation. Already, a number of EU members require reduced stall use, with the Netherlands requiring sows to be out of stalls from five days post-insemination. Grouping sows post-insemination works well, providing the aggression at mixing is not acute and does not occur during embryo implantation. Producing totally stall-free pork would require a different approach to sow management around breeding, and it has its potential benefits and risks. Mixing sows at weaning will prevent any stress influencing sow conception rate, but we need to consider how mixing aggression may disrupt onset of estrus in sows. Conversely, there is research to suggest that the mixing stress could stimulate a quicker return to estrus in sows, and through

allowing sows to display group estrus behaviour, there is the potential to have a better synchronization of estrus in a breeding group. Management options need to be researched to determine what is best for the sow, her welfare and productivity, and in turn whether there are any advantages to be gained.

Is grouping sows at weaning viable?

A study was conducted at the Prairie Swine Centre (PSC), in collaboration with Yuzhi Li from the University of Minnesota, to investigate the effects of mixing sows at weaning, in comparison to when sows are mixed at five weeks gestation, to evaluate effects on sow aggression, welfare and productivity. Three treatments were compared:

- 1) Early Mixing (EM): Sows mixed into groups directly from weaning
- 2) Late Mixing (LM): Sows stall housed at weaning and mixed at five weeks gestation
- 3) Pre-socialisation (PS): Sows mixed for two days after weaning, then continually stall housed for breeding and up to five weeks gestation, after which sows were mixed back to groups (same groups).

The PS provided an intermediate treatment to examine if early formation of the social group would reduce the aggression in the second mixing.

Table 1. Production characteristics of sows in three mixing treatments: Early Mixing (EM); Pre-Socialization (PS); and Late Mixing (LM).

Variable	Treatments			P
	EM	PS	LM	
Conception rate (%)	98	94	87	<0.05
Wean to Service Interval (days)	4.06	4.51	4.31	NS
Total born	15.16	15.63	15.47	NS
Born Alive	13.66	13.27	13.18	NS
Still born	0.95a	1.54b	1.58b	<0.005
Mummies	0.47	0.44	0.53	NS

NS = not significant

For all treatments, sows were housed in fully slatted group pens from weaning, with the free-access stalls used to house sows during feeding, heat checks and breeding. When the treatment required sows loose in a group, sows were fed each morning in the free-access stalls, after which they were locked out of the stalls, ensuring sows socialized for up to 22 hours per day in the communal loafing area. Where treatments required sows in stalls, sows were locked in the free-access stalls.

Sow aggression, welfare and reproductive performance (wean-to-service interval, conception rate, and farrowing performance) were measured, along with salivary cortisol as a physiological measure of stress. Additionally, estrus behavior was measured in the EM groups, to determine if keeping sows loose from weaning can help to stimulate group estrus behaviour.

Results: Each system can work!

Aggressive interactions observed in the two days post mixing, were no different between treatments, and the overall levels of aggression were low. Similarly, no differences were found between sow cortisol levels and lameness. Skin injury scores were lower in PS sows compared to EM and LM sows after the first mixing. When remixed, sows in the PS treatment had significant increase in injuries than following the first mixing. However, injury scores on all sows were very low. This data suggests sow welfare was not significantly affected by the mixing treatments.

Loose in a group from weaning, and despite being on a slatted floor, expression of estrus behaviour was observed in EM groups of sows with increased frequency from days 3 to 4 post weaning. The average percentage of the pen group involved in estrus behaviour increased from 30% to 48% from days 3 to 4.

Under good conditions of management, grouping sows at weaning does not negatively impact sow performance or welfare.

Sows managed with EM had the highest conception rate, the LM the lowest, and the PS treatment in between (Table 1). It is not clear why the LM treatment, which is the standard practice for managing sows around breeding and early gestation had the lowest conception in this trial. It may reflect comparatively sub-optimal stimulation of estrus in the stall housing, compared to in the EM and PS groups, which received mixing stress immediately at weaning. There is evidence that correct timing of stress post weaning can bring on estrus, and thus may have stimulated follicular growth and clearer estrus expression.

The EM treatment showed a significant reduction in the number of stillborn piglets. This appears to indicate a beneficial effect of allowing sows free movement during the early stages of pregnancy. This may be an effect of improved sow fitness, or may have links to an effect of sow movement on embryo placement along the uterine horns, and subsequent placental attachment, of which research in humans has shown to be influenced by maternal activity.

What can be concluded?

There may be production advantages to mixing sows into groups at weaning, as indicated by improved conception rates and reduced stillborns,

as found in this trial, and these effects should be explored further. The same results may not be true in a group feeding system in which sows have to cope with a higher levels of competition, such as a heavily stocked ESF pens, or if they cannot access their daily requirement for food, as is a risk with competitive feeding systems (e.g. floor feeding). While no effect on sow lameness was found in this trial, pens in which sows are mixed should have very good quality flooring to reduce injury, and is a requirement if expression of estrus behaviour is to be encouraged. In conclusion, grouping sows at weaning is a viable option under the correct conditions of management. With forethought on the pressure to reduce stall use, some producers changing to group housing may wish to consider design considerations to allow sows to be managed in groups from weaning.

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