Productivity of Sows and Gilts in Various Management Programs with ESF

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SUMMARY

In this study we examined the effect of management methods on the productivity of gilts and sows in a group housing system using electronic sow feeders. Dynamic groups, provided animals were not removed or added more often than every 5 weeks, did not affect sow productivity. Grouping animals prior to embryonic implantation resulted in lower productivity than for sows spending 6 weeks in stalls after breeding. This difference was largely due to a reduced farrowing rate rather than poor litter size. Performance of sows in stalls was intermediate to the various group housing methods.

INTRODUCTION

The restriction on movement placed upon sows in gestation stalls has led numerous consumer groups to advocate a move to group housing. The challenge to group housing is to ensure appropriate levels of feed intake for all animals, and to create a social group that can minimize the effects of aggression at the time of group formation. Group housing actually refers to a variety of housing systems and management options, ranging from floor feeding to electronic sow feeders; group sizes from four to several hundred; and regrouping at weaning through to some time after pregnancy is confirmed. It is important for producers to be aware of the effects of these options if they intend to consider alternatives to gestation stalls. Electronic sow feeders (ESF) provide a feeding station that allows one animal at a time to enter and be fed its specific amount of feed. We examined two social management options within an ESF system to determine their effects on productivity.

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EXPERIMENTAL PROCEDURES

The study was conducted over six breeding cycles at PSC Elstow Research Farm. In total, over 800 breedings were involved, with animals ranging in age from gilt to 5th parity. New animals were added each reproductive cycle. Within the ESF system we considered small groups of approximately 35 sows that were all added to the pen at the same time (static) vs larger (120 sows) that were dynamic, that is groups of approximately 35 sows were removed for farrowing and others added at 5 week intervals. We also considered two stages of gestation at which to place the animals. Animals were either moved to the ESF 8-10 days after breeding, or approximately 45 days after breeding, by which time embryonic implantation should have occurred. We also collected data from animals kept in stalls for their entire gestation.

RESULTS AND DISCUSSION

Farrowing rate was determined based on all sows mated. We also recorded live piglets born, and calculated the number of live piglets per 100 sows mated. This measure combined farrowing rate and litter size. We classified the sows by parity as gilts, 1st, 2nd and mature, and calculated an adjusted performance assuming a standard distribution of ages in each system. Animal flow problems developed during our first two breeding cycles leading to a decision to house gilts separately from sows in order to be trained to the ESF system.

The farrowing rate of the animals differed with parity, being lowest for gilts and not differing among the older animals (Table 1). This is not an uncommon finding on commercial herds, but the depression was greater within the ESF system. Once gilts were housed by themselves we did not see such a difference. There were no differences between the static and dynamic groups for farrowing rate. Although the farrowing rate for post-implant sows was 4% higher than for pre-implant animals, the difference was not significant. Although such a difference would be a major concern on a commercial farm, the week to week variation in farrowing rate was substantial and precluded a significant treatment effect. Stalled sows were intermediate to the ESF groups of sows. Litter size was smaller for gilts than for other parities, and total live piglets per 100 sows bred was highest for the post-implant than for pre-implant treatment (Table 2). Again, stalled animals were intermediate.

CONCLUSION

Productivity equal to that obtained in stalls can be achieved in an ESF system, but this was only possible in our study if animals were already past implantation when the group was formed. Other studies using only pre-implant grouping tend to report lower productivity in groups. Static and dynamic systems did not differ, but it should be pointed out that our dynamic system involved adding new animals at 5 week intervals, not weekly as in several other studies. It is important to note the management methods used in group housing studies, as these can affect the outcome of the comparison.

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Table 1. Farrowing rate of gilts and sows in Stalls and various management programs within an Electronic Sow Feeder system[1]

		Pre-Implant		Post-Implant	
	Stalls	Static	Dynamic	Static	Dynamic
Gilt	793	678	681	734	763
1st Parity	898	874	865	929	910
2nd Parity	922	879	956	896	1,008
Mature	948	896	896	982	980
Adjusted[2]	895	834	845	894	917
Adjusted Sows[3]	929	886	898	948	968

[1]Results of five reproductive cycles with new gilts added each cycle.
[2]Based on a theoretical herd demographic of 25% gilts, 20% 1st parity, 18% 2nd parity and 37% mature (approximates a 15% culling rate per cycle to a maximum 6th parity).
[3]Based on a theoretical sow herd run without gilts, as we have done for 3 cycles, with 27% 1st parity, 23% 2nd parity and 50% mature (approximates a 15% culling rate to a maximum of 6 parities).