

# Sow and Litter Performance for Individual Crate and Group Hoop Barn Gestation Housing Systems: Progress Report II

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## Introduction

The effects of swine gestation housing on sow and litter performance were evaluated at the Iowa State University Lauren Christian Swine Research and Demonstration Farm near Atlantic, IA. The gestation systems were 1) individual gestation crates in a mechanically-ventilated, partially-slatted floor manure flush confinement building (CRATE); and 2) group pens in deep-bedded, naturally-ventilated hoop structures (HOOP). The HOOP sows were fed in individual feeding stalls. The sow genotypes were 1/4 Hampshire × 1/2 Yorkshire × 1/4 Landrace. Farrowing occurred every 2 weeks throughout the year.

## Materials and Methods

The breeding protocol was to inject each sow with PG600 at weaning. The sows were moved from the farrowing rooms to group pens in the centralized, slatted confinement breeding barn. Four days post-weaning heat detection with a mature boar was performed daily. Sows were artificially inseminated 24 hours after estrus detection. Sows were inseminated a second time 48 hours after estrus detection. Insemination occurred in the presence of a mature boar. At breeding, the sow was moved to an individual stall. Breeding continued for approximately 7 days per group. Sows were moved as a group to their assigned gestation housing by the ninth day post-breeding. Sows were randomly assigned to a housing system treatment by farrowing group when the project commenced.

All first parity gilts were gestated in individual crates and randomly assigned to a gestation group after breeding for the second parity. This practice was followed to minimize sow size differential and sow aggression in the group housing system.

Group size was approximately 35 sows per group. The experimental unit was a group of sows. There were three groups of sows for each housing treatment. Sows were initially assigned to groups on a random basis based on housing availability. Sows remained in the same gestation housing treatment until culling. Culling occurred due to poor performance, disposition, failure to conceive by third estrous, fitness (condition, lameness, size), and death. Sows were not culled due to age or parity. Culling cause was recorded.

The records summarized were for farrowings that occurred from March 2001 to September 2003. A total of 493 litters are included in the analysis. First parity litters were not included in the analysis because gilts were housed in gestation crates for their first gestation. The sow and litter data were summarized using PigCHAMP. Only sows that remained in their assigned gestation housing groups were included in this analysis. Sows that switched gestation housing systems were not included.

During gestation, all sows were fed 4.5 lb/day of a corn-soy diet. During the last trimester of gestation, feed allowance was increased to 6 lb/day. During the winter HOOP sows were fed 25% more and CRATE sows were fed 5% more feed. Individual sow feed adjustments occurred and were recorded. Winter was defined as November through March.

At farrowing, the number of pigs born alive, stillborn or mummified were recorded. The birth

weight of the live pigs was also recorded. Weaning occurred at 17–19 days of age. Crossfostering within 24 hours of birth was permitted to equalize litter size and pig weight.

### Results and Discussion

The summary of 493 litters during approximately 30 months (March 2001 through September 2003) is shown in Table 1. The data presented are raw means and are preliminary in nature. Note: This is a progress report and not the complete study. The data are not balanced for seasonal effects; therefore, conclusions should be considered preliminary. Overall, sows gestated in HOOP and CRATE gestation systems performed similarly.

Several apparent differences were observed when HOOP and CRATE sow performance was compared:

- Wean-to-breed interval – slightly less for HOOP sows.
- Pigs born alive/litter – slightly more pigs per litter for HOOP sows.

- Percent mummified pigs – slightly lower percentage for CRATE sows.
- Pigs weaned/mated female/year – slightly more pigs per sow per year from HOOP sows.
- Sow culling rate – slightly higher culling rate for HOOP sows.

The preliminary data suggest that gestating sows can be successfully housed in deep-bedded hoop barns equipped with individual feeding stalls. These trends only reflect data from sows that remained in their originally assigned housing treatment for the entire study. Many factors including breeding protocol, sow management, sow genetic lines, feeding levels, and farm health status could greatly impact the results from distinct gestation housing systems.

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**Table 1. Performance of sows housed in deep-bedded hoop barns or individual confinement crates during gestation.<sup>1</sup>**

	<u>HOOP Groups</u>	<u>Individual CRATES</u>
Breeding Performance		
Services, total no.	223	402
Wean-to-breed interval, d	6.9	9.5
Sows bred by 7d, %	93.3	89.7
Farrowing Performance		
Farrowings, no.	174	319
Pigs born alive/litter, no.	10.7	10.2
Stillborn pigs, %	11.8	11.4
Mummies, %	2.2	1.6
Farrowing rate, %	80.6	79.8
Litters/mated sow/year, no.	2.2	2.1
Farrowing interval, d	153	160
Weaning Performance		
Pigs weaned/litter, no.	9.0	9.1
Pre-weaning mortality, %	14.7	12.7
Weaning age, d	19.2	19.3
Pigs/mated female/year, no.	19.6	19.1
Culling rate, %	17.9	14.7
Sow mortality rate, %	6.0	6.4

<sup>1</sup>Period covered is March 2001 through September 2003.