

Interaction of Nursery and Growing–Finishing Space Allocation for Pigs

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ASL-R1587

Summary and Implications

Although feed intake and growth rate data were inconclusive, pigs that were crowded for floor space in the nursery period may have been less negatively affected by crowding in the growing–finishing period than were pigs that had adequate floor space during the nursery period.

Introduction

This research is part of a larger study conducted by members of the North Central Regional Committee–89 on Swine Management (NCR–89) to determine if the space allocation to pigs in the nursery period has an influence on their space needs for optimum growth and carcass performance in the growing–finishing period.

Materials and Methods

The space allocation treatments were in a 2×2 factorial arrangement with 1.75 vs. 2.25 ft² per pig in the nursery period and 6.5 vs. 8.0 ft² per pig in the grower–finisher period. In the nursery period, all pigs were penned in 4×4 ft raised deck pens with woven-wire floors. Space allowance was varied by placing six or eight pigs per pen. Pigs were penned on partially slotted concrete floors during the growing–finishing period. Space allowance was adjusted by moving pen dividers.

Crossbred pigs were weaned at an average body weight of 5.9 kg. They were randomly allotted from outcome groups based on body weight and ancestry to blocks of contiguous pens with a restriction that each pen was balanced for sex (barrows and gilts). There were 4 treatments, 3 blocks, and 6 or 8 pigs per pen for a total of 84 animals.

Pigs were weighed individually and feed intake was determined at weekly intervals in the nursery period and every other week in the grower–finisher period.

Pigs were fed proprietary diets during the nursery period that were formulated with mixes from Carl Akey,

Inc. During week 1, weeks 2 and 3, week 4, and week 5, the pigs were fed mixes “2000”, “700”, “400”, and “200”, respectively. In the growing–finishing period corn–soybean meal diets were prepared using the Carl Akey, Inc., “G–F premix”. These formulations contained 1.0, .95, .85, .75, and .60% lysine for week 1, to 80 kg, 80 to 130 kg, 130 to 190 kg, and 190 to 240 kg of body weight, respectively.

Pigs were marketed in the week that they reached a 240-lb body weight. Once 50% of the pigs in a pen had been marketed, the remaining pigs were marketed as a group in the week that the pen average pig weight was 240 lb. At slaughter, the following carcass measurements were made: carcass weight, length and yield, grade, average midline backfat, 10th rib backfat, loin muscle area, loin quality score, and carcass lean adjusted to a 170-lb carcass weight.

Results and Discussion

Performance data are presented in Table 1. There were trends for slightly less ADFI ($P<.25$) and slower ADG ($P<.11$) by pigs allowed only 1.75 ft²/pig compared with those allowed 2.25 ft²/pig during the 5-week nursery period. Feed efficiency (gain:feed) was not affected by treatments. These responses are in agreement with published reports that suggest that weanling pigs require about 2 to 2.5 ft² of floor space for maximum feed intake and growth rate.

The space allowed pigs in the nursery may have influenced their response to crowding in the growing–finishing period. The pigs that were crowded (1.75 ft²) in the nursery period did not have reduced ADFI and ADG if crowded during the growing–finishing period, whereas those that had adequate space (2.25 ft²) in the nursery period had reduced ADFI and ADG. These responses were only trends; ADFI interaction ($P<.38$) and ADG interaction ($P<.22$). Gain:feed ratios were not affected by treatments.

This experiment was part of a larger project by the NCR–89 Committee on Swine Management. When the results presented here are combined with those from other stations, we should have more definitive conclusions on animal performance responses to these treatments.

Carcass data are presented in Table 2. There were no indications of effects of space allowance in the nursery and growing finishing periods on any of the carcass measurements.

Table 1. Interaction of nursery and G-F space allocation in pigs—growth performance data.

| Item | Starter G-F | Treatments, space ft ² | | | | CV | P< |
|-----------------|----------------|-----------------------------------|-------------|-------------|-------------|-----|-----|
| | | 1.75 6.5 | 1.75 8.0 | 2.25 6.5 | 2.25 8.0 | | |
| ADG, lb | | | | | | | |
| Nursery | | .87 | .82 | .89 | .90 | 5.2 | .28 |
| G-F | | 1.86 | 1.82 | 1.79 | 1.85 | 3.6 | .57 |
| Entire | | 1.62 | 1.58 | 1.57 | 1.62 | 3.3 | .59 |
| ADFI, lb | | | | | | | |
| Nursery | | 1.29 | 1.24 | 1.32 | 1.33 | 6.5 | .57 |
| G-F | | 4.86 | 4.80 | 4.76 | 4.98 | 5.2 | .74 |
| Entire | | 3.98 | 3.94 | 3.93 | 4.09 | 4.8 | .73 |
| Gain/feed | | | | | | | |
| Nursery | | .674 | .667 | .674 | .679 | 2.3 | .82 |
| G-F | | .384 | .378 | .375 | .370 | 2.6 | .51 |
| Entire | | .406 | .400 | .400 | .395 | 2.2 | .53 |
| Body weight, lb | | | | | | | |
| Initial | | 12.7 | 13.6 | 12.8 | 12.8 | 5.0 | .28 |
| Grower | | 43.6 | 42.3 | 45.4 | 45.7 | 4.3 | .21 |
| End | | 243 | 239 | 239 | 248 | 1.7 | .14 |

Table 2. Interaction of nursery and growing–finishing space—carcass data.

| Item | Starter G-F | Treatments, space, ft ² | | | | CV | P< |
|------------------------------|----------------|------------------------------------|-------------|-------------|-------------|------|-----|
| | | 1.75 6.5 | 1.75 8.0 | 2.25 6.5 | 2.25 8.0 | | |
| Carcass wt, lb | | 185.7 | 178.7 | 183.3 | 185.8 | 3.8 | .59 |
| Carcass yield, % | | 73.20 | 73.88 | 73.04 | 73.54 | .6 | .54 |
| Carcass length, in | | 32.66 | 32.32 | 32.71 | 32.88 | 1.1 | .38 |
| Carcass grade | | 2.58 | 2.62 | 2.68 | 2.56 | 15.3 | .98 |
| Backfat, midline, in | | 1.13 | 1.09 | 1.11 | 1.07 | 7.5 | .84 |
| Backfat, 10th rib, in | | .94 | 1.00 | .93 | .99 | 10.1 | .76 |
| Loin muscle, in ² | | 6.16 | 6.10 | 6.16 | 6.11 | 5.0 | .99 |
| Loin quality score, avg | | 2.75 | 2.71 | 2.95 | 2.71 | 4.4 | .14 |
| Lean, % ^a | | 49.25 | 49.58 | 49.47 | 49.78 | 1.9 | .92 |

^aAdjusted to a 170-lb carcass weight.