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Space Allocation Decisions for Barrows and Gilts

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Summary and Implications

An experiment was conducted to determine if barrow and gilt performance could be modified by varying pen space allocation for each sex and whether performance of barrows given less space per pig could be enhanced with a more nutrient-dense diet. Barrows given 6 ft^2 of pen space per pig consumed less feed and grew slower with no effect on lean gain compared to barrows provided 7 ft^2 of pen space per pig. Increasing diet nutrient density by feeding the diet sequence recommended for gilts to barrows had no effect on performance for barrows at 6 ft^2 per pig. No differences in performance or carcass measurements were found when space allocation for gilts was increased from 7 to 8 ft^2 per pig. These results suggest that instead of stocking all-in/all-out (AIAO) managed grow-finish facilities at 7 ft^2 per pig for both barrows and gilts, growth rate of barrows can be restricted to match that of gilts if barrows are given 6 ft^2 and gilts 8 ft^2 of pen space per pig. For producers with barns of 500 head capacity managed AIAO, this manipulation of barrow growth results in increased numbers of barrows and gilts of the same weight at the same time, thus increasing producer marketing options.

Introduction

A frustration for many pork producers utilizing all-in/all-out (AIAO) management in growing-finishing facilities is that barrows generally grow faster than littermate gilts. This faster daily gain results in facilities which may have up to 50% of the pens empty one to two weeks while waiting for the slower growing gilts to achieve similar market weight. In many smaller facilities, this differential in growth rate results in the inability of producers to market load lots of pigs, resulting in market access restrictions due to transportation costs. The purpose of the following experiment was to see if barrow and gilt performance could be modified by varying the space allocation and if performance of barrows given less space per pig could be enhanced with a more nutrient-dense diet.

Methods

Terminal-cross pigs of high lean gain potential were allotted to various floor space and dietary treatments (Table 1). Treatment 3 was included to determine the effect of feeding a gilt diet (higher in lysine and other essential amino acids beginning at 80 pounds liveweight) to barrows given less floor space.

The experiment was conducted at the University of Nebraska's Northeast Research and Extension Center at Concord from November - March 1996. The facility was a fully slatted, double wide, naturally ventilated barn with fresh water under slat flushing for manure removal. Pen size was 7 ft x 8 ft with the experimental space allocations achieved by varying the number of pigs per pen. In the event of pig removal for poor performance, pen size was adjusted to maintain the desired stocking density. There was one nipple drinker per pen and one two-hole self feeder.

Diets were formulated with corn and soybean meal according the University of Nebraska recommendations for barrows or gilts of high lean gain potential. Diets were switched on the week pens of pigs averaged 80, 130 and 190 pounds. The lysine sequence

Table 1. Dietary and floor space treatments

Treatment	No. of pens	Floor space, ft ^{2}/pig	Sex	Diet provided
1	6	7	Barrow	Barrow
2	6	6	Barrow	Barrow
3	6	6	Barrow	Gilt
4	6	7	Gilt	Gilt
5	6	8	Gilt	Gilt

Table 2. Effect of space allocation on sex-fed growing-finishing pigs

	Barrows			Gilts		Contrasts			
Space (ft^2/pig):	7	6	6	7	8	1	2	4	1+4
Diet[a]:	B	B	G	G	G	vs	vs	vs	vs
Treatment:	1	2	3	4	5	2	3	5	2+5
No. pens	6	6	6	6	6				
Pig weight, lb									
Initial	50.0	50.2	50.1	49.0	49.0				
Final	255.8	253.9	253.3	251.6	254.2				
Average daily gain, lb	1.88	1.79	1.79	1.72	1.78	P<.05	NS[b]	NS	NS
Average daily feed, lb	5.98	5.80	5.76	5.48	5.52	P<.075	NS	NS	NS
Feed:gain	3.18	3.23	3.23	3.18	3.10	NS	NS	NS	NS
Carcass % lean[c]	49.6	49.9	50.0	52.0	51.6	NS	NS	NS	NS
Lean gain, lb/d[c]	.78	.79	.78	.83	.82	NS	NS	NS	NS

[a]B = diet designed for barrows and G = diet designed for gilts.
[b]Not significant.
[c]Containing 5% fat.

for the gilt diets was 1.00, .93, .88, and .69%. For the barrow diets, the lysine sequence was 1.00, .88, .73, and .60%.

Individually identified pigs were removed for slaughter on the week they weighed 240 pounds or greater. Carcass lean percentage was estimated using total body electrical conductivity (TOBEC) on the individually identified carcass at SiouxPreme Packing Co, Sioux Center, IA.

Results and Discussion

Reducing space allocation for barrows from 7 to 6 ft^2 per pig resulted in a reduction in daily feed intake and daily gain, with no effect on feed efficiency, carcass lean or lean gain (Table 2). While not significant, there was a slight increase in daily gain for gilts at 8 ft^2 vs 7 ft^2 of pen space per pig. Providing barrows housed at 6 ft^2 per pig a diet sequence designed for the lower feed intake of gilts did not improve daily gain, feed conversion efficiency, carcass lean or lean gain compared to barrows fed the recommended diet sequence.

In this experiment, providing barrows 6 ft^2 and gilts 8 ft^2 of pen space per pig resulted in similar rates of gain from purchase to slaughter. However, carcasses from barrows still had a lower percent lean than those from gilts and increasing dietary nutrient density to crowded barrows by feeding diets intended for gilts did not improve their performance.

Conclusion

These results suggest performance of barrows in AIAO managed grow-finish facilities can be altered such that their daily gain is similar to gilts if barrows are provided 6 ft^2 and gilts 8 ft^2 of pen space per pig. There is no effect on either performance or carcass measurements if barrows, which are restricted to 6 ft^2 of pen space per pig and have lower daily feed intake than those given 7 ft^2 of pen space per pig, are given a diet sequence higher in lysine and other amino acids beginning at 80 pounds liveweight.

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