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## SPACE REQUIREMENTS OF FINISHING PIGS FED TO AN AVERAGE PEN WEIGHT OF 250 POUNDS

R. H. Hines, R. I. Nicholson, R. D. Goodband,  
G. E. Fitzner, J. L. Nelssen,  
D. A. Nichols, and J. D. Hancock

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### Summary

Space allowances of 6, 8, 10, and 12 ft<sup>2</sup> were evaluated for pigs fed from 130 lb to a pen average of 250 lb. Average daily gain and average daily feed intake increased linearly ( $P < .05$ ) as space allowance increased. However, those pigs permitted 10 or 12 ft<sup>2</sup> of space were similar in avg daily gain, avg daily feed intake, and feed efficiency, suggesting that 10 ft<sup>2</sup> of space is adequate for feeding finishing hogs to a heavier average pen weight. Coefficients of variation (CV) for initial weight and final weight were increased for pigs with 6 ft<sup>2</sup>, whereas for those exposed to 10 and 12 ft<sup>2</sup>, the CV was reduced, indicating more uniform pigs at final weight with greater space allowance.

(Key Words: Finishing Pig, Space Allowance, Heavier Weight.)

### Introduction

Market hog weights have increased over the past few years because of inexpensive feed and a desire by producers to spread production costs over a greater number of pounds of pork sold. The effect of limited space allowance on performance of hogs fed to a heavier pen weight has been questioned. Most producers usually allow 6 to 8 ft<sup>2</sup> per pig for finishing hogs because of facility cost, lack of facilities, or too many pigs for the existing facilities.

Last year in the *KSU Swine Day Report of Progress 556*, we reported a study that compared 7, 9, and 11 ft<sup>2</sup> of space on the performance of finishing pigs fed to a heavier market weight (250 lb) but removed individually as they reached the desired weight each week. In that study, 7 ft<sup>2</sup> was inadequate space allowance, as shown by significantly reduced avg daily feed intake and avg daily gain. No significant differences were observed between the performance of pigs allowed 9 or 11 ft<sup>2</sup> for the traits of avg daily gain, feed intake, or feed efficiency, suggesting that 9 ft<sup>2</sup> was adequate space for this management system. To follow up this study, a second experiment was designed to evaluate space allowances of 6, 8, 10, and 12 ft<sup>2</sup> and carrying all the pigs in the pen to a mean weight of 250 lb.

### Experimental Procedures

Growth trials were conducted to evaluate 6, 8, 10, or 12 ft<sup>2</sup> space allowance per pig on the performance traits of avg daily gain, avg daily feed intake, and feed required per lb of gain. Pigs were allotted to one of the four treatments on the basis of weight, litter, and sex. Pigs were housed in a modified, open-fronted building with 16-ft-long pens adjusted for width to develop the desired square footage. Each pen had 8 ft of concrete slats and 8 ft of solid floor lengthwise of the pen. Each pen housed 18 pigs and was equipped with two, two-hole self-

feeders and one nipple waterer. All pigs were fed ad libitum a sorghum grain-soybean meal fortified diet that had a calculated analysis of 14.7% crude protein, .66% lysine, .65% calcium, and .50% phosphorus.

Pigs were weighed biweekly for the first 42 days of the trial and weekly thereafter until an avg wt of approximately 250 lb ( $\pm$  3 lb) per pen was reached.

### Results and Discussion

The effects of space allowance on pigs fed to a heavier pen avg wt are shown in Table 1.

**Table 1. Effect of Space Allowance on Performance of Finishing Pigs Fed to an Average Pen Weight of 250 lb**

Item	Space allowance, ft <sup>2</sup> /pig			
	6	8	10	12
<u>Day 1 to 42<sup>a</sup></u>				
Avg daily gain, lb <sup>b</sup>	1.54	1.56	1.67	1.68
Avg daily feed intake, lb <sup>b</sup>	5.78	5.94	6.30	6.36
Feed/gain	3.76	3.83	3.76	3.78
<u>Day 43 to 56</u>				
Avg daily gain, lb <sup>b</sup>	1.38	1.76	1.70	1.79
Avg daily feed intake, lb <sup>b</sup>	6.09	6.57	6.93	7.31
Feed/gain <sup>c</sup>	4.37	3.71	4.10	4.09
<u>Day 57 to 70</u>				
Avg daily gain, lb	1.45	1.54	1.71	1.59
Avg daily feed intake, lb <sup>b</sup>	5.72	6.31	7.25	6.70
Feed/gain	4.01	4.28	4.28	4.20
<u>Overall<sup>a</sup></u>				
Avg final wt, lb	249.6	250.2	252.9	250.3
Avg no. d on feed <sup>b</sup>	84.0	77.0	73.5	70.0
Avg daily gain, lb <sup>b</sup>	1.42	1.58	1.68	1.69
Avg daily feed intake, lb <sup>b</sup>	5.92	6.21	6.57	6.62
Feed/gain	4.16	3.93	3.92	3.92

<sup>a</sup>Eighteen pigs per pen with four pens/treatment, avg initial wt 130 lb.

<sup>b</sup>Linear effect of space allowance ( $P < .05$ ).

<sup>c</sup>Quadratic effect of space allowance ( $P < .05$ ).

During the first 42 d of the trials, those pigs allowed 10 or 12 ft<sup>2</sup> of space grew significantly faster ( $P<.05$ ) and consumed more feed per day ( $P<.05$ ) than those with 6 or 8 ft<sup>2</sup>. Average daily gain increased and avg daily feed intake increased linearly ( $P<.05$ ) as space allowance was increased from 6 to 12 ft<sup>2</sup>. Feed efficiency was similar for all pigs. At the end of 42 d, the avg wt of the pigs was approximately 200 lb, suggesting that 6 and 8 ft<sup>2</sup> may not be enough space allowance for pigs as they grow from 130 lb to 200 lb.

During the next 14 d, avg daily gain and avg daily feed intake continued to increase linearly with increased space allowance ( $P<.05$ ). Pigs permitted 6 ft<sup>2</sup> grew significantly ( $P<.05$ ) slower than pigs offered 8, 10, or 12 ft<sup>2</sup>, which were all similar in growth rate. Feed/gain showed a quadratic response ( $P<.05$ ) in that the least efficient pigs were those allowed 6 ft<sup>2</sup> and the most efficient were those allowed 8 ft<sup>2</sup>. The avg wt of the better performing pigs after 56 days on trial was approximately 225 to 230 lb.

From d 56 to d 70 of the trial, avg daily gain was very erratic. During the first week it was extremely hot, resulting in a reduction in feed intake and daily gain, but during the next week, the weather was cooler than normal, resulting in some compensation for the previous week. Average daily gain and feed intake was significantly reduced ( $P<.05$ ) for the pigs allowed 6 ft<sup>2</sup>. At the end of 70 days on trial, pigs permitted 12 ft<sup>2</sup> averaged 250 lb, whereas those permitted 6 ft<sup>2</sup> averaged 234 lb.

In the overall trial, pigs allowed 6 ft<sup>2</sup> required significantly more ( $P<.05$ ) time to reach an avg pen wt of 250 lb than those with more space allowance. Those pigs allowed 12 ft<sup>2</sup> reached 250 lb 3.5 d sooner than those allowed 10 ft<sup>2</sup>, 7 days sooner than those allowed 8 ft<sup>2</sup>, and 14 d quicker than those allowed 6 ft<sup>2</sup>. Average daily gain and avg daily feed intake were linearly increased ( $P<.05$ ) as space allowance increased. However, those pigs permitted 10 and 12 ft<sup>2</sup> had similar avg daily gain, avg daily feed intake, and feed efficiency, suggesting that 10 ft<sup>2</sup> is adequate space for feeding hogs from 130 lb to a pen avg of 250 lb.

Coefficient of variation (CV) within pens for initial wt and final wt was determined for each treatment. CV for pig wt for pens permitting 6 ft<sup>2</sup> increased from 6.7% to 8.7%, suggesting inadequate space for feeding. CVs for pig wt for pens permitting 10 or 12 ft<sup>2</sup> were reduced from 7.2% to 5.9% for 10 ft<sup>2</sup> and 6.9% to 5.9% for 12 ft<sup>2</sup>, indicating that the final weights of the pigs were more uniform than their initial weights. CVs for the pigs allowed 8 ft<sup>2</sup> remained the same (7.0% for initial wt and 7.0% for final wt).