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## EFFECT OF TYPE OF CONFINEMENT HOUSING ON PERFORMANCE OF GROWING-FINISHING SWINE

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Confinement housing has been increasing in popularity with swine producers during the past several years. The main types of confinement housing in use include totally enclosed or modified open-front buildings that generally have partially or completely slatted floors and open-front buildings with outside concrete lots. Previous research conducted by the authors has shown that pigs housed in an enclosed confinement building did not gain as well as pigs that had access to an outside concrete feeding floor. The difference in performance was found to occur mainly during the finishing period.

The experiment reported herein was conducted to determine if the length of time pigs were in an enclosed confinement building affected their growth rate.

### Experimental Procedure

Six replicate groups of 24 crossbred pigs averaging about 51 lb. were used in this experiment. The pigs were allotted from groups of uniform weight within sex to provide six treatment groups of four pigs (two barrows and two gilts) within replicate. These groups were then randomly assigned to the following housing treatments:

- Treatment 1 - Enclosed building
- Treatment 2 - Enclosed building to 160 lb., then open-front
- Treatment 3 - Enclosed building to 120 lb., then open-front
- Treatment 4 - Open-front building
- Treatment 5 - Open-front building to 160 lb., then enclosed
- Treatment 6 - Open-front building to 120 lb., then enclosed

The open-front buildings were uninsulated wooden houses (8 x 12 feet) that were divided in the center to make two inside pens 8 x 6 feet. Each pen had an outside concrete area (6 x 12 feet) where feeders and waterers were located. The enclosed confinement building was an insulated, ventilated building with totally slatted floors. Pens were 3.7 x 7.75 feet excluding the area where self-feeders were located. A 16% protein corn-soybean meal diet was fed from the start of the experiment until pigs within pens averaged about 120 lb. and a 13% protein diet was fed from 120 lb. until the experiment was terminated when pigs within lots averaged about 220 pounds. The experiment was conducted from early May to late September. The composition of the diets is shown in table 1.

## Results

The average daily gain, feed consumption and feed/gain data for the six housing treatments are shown in table 2. Average daily gain was 11% faster during the first period (51 to 120 lb.) when pigs were housed in the open-front house with outside feeding area compared to pigs in the totally enclosed building. Moving pigs from the enclosed to the open-front building at 120 lb. resulted in an improvement in gain compared to those remaining in the enclosed house during this period. However, moving pigs from the open-front facility to the enclosed building resulted in slightly decreased gains compared to those pigs remaining in outside lots. Gains were also improved when pigs were moved to outside lots at 160 pounds. For the entire trial, gains were 1.50, 1.52 and 1.62 lb. for pigs housed in the enclosed building to 220, 160 or 120 lb., respectively, and 1.65, 1.66 and 1.61 lb. for pigs in the open-front building to the above respective weights. These data indicate a benefit for moving pigs from the enclosed to the open-front building at 120 lb. and a slight decrease in gains if moved from the open-front to the enclosed building at this weight.

Feed consumption was greater for pigs housed in the open-front building. Feed/gain did not appear to be affected by type of housing. The experiment was conducted during late spring and summer and temperature did not affect feed efficiency as would be expected during the winter season.

Table 3 summarizes the growth performance by periods and housing type. In each of the three periods, 51 to 120 lb., 120 to 160 lb. and 160 to 220 lb., pigs housed in the open-front buildings consumed more feed daily and gained more rapidly than those pigs in the enclosed buildings, irrespective of the housing imposed during the previous periods. Feed/gain was similar in the first and third periods but favored the pigs in the open-front building during the 120 to 160 lb. period.

The effect of moving pigs at 120 or 160 lb. is shown in table 4. There appears to be some improvement in rate of gain during the period from 160 to 220 lb. if pigs were moved at 120 or 160 lb. live weight. The difference observed was due to the fact that pigs moved from enclosed to open-front buildings had a greater increase in rate of gain than the decreased gains that occurred when pigs were moved from open-front to enclosed buildings. However, overall benefit for the entire experiment was very small.

## Summary

One hundred forty-four pigs averaging 51 lb. were used in a late spring and summer trial comparing totally enclosed and open-front housing.

Pigs housed in the open-front type building with outside feeding floors consumed more daily feed and gained faster than did pigs housed in an enclosed building. Moving pigs from the enclosed building to the open-front building at weights of 120 and 160 lb. resulted in improved gains. Pigs housed in open-front buildings to 120 or 160 lb. and then moved to enclosed buildings were less affected by the move.

Table 1. Composition of Diets (Percent)

	16% protein to 120 lb.	13% protein 120-220 lb.
Corn	76.5	85.1
Soybean meal, 44%	20.7	12.2
Dicalcium phosphate	1.3	1.3
Ground limestone	.8	.7
Trace mineralized salt	.5	.5
Premix <sup>a</sup>	.2	.2

<sup>a</sup> Supplied per lb. of diet: vitamin A, 1500 IU; vitamin D, 150 IU; vitamin E, 2.5 IU; vitamin K, 1 mg; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 8 mg; choline, 25 mg; vitamin B<sub>12</sub>, 5 mcg and aureomycin, 25 milligrams.

Table 2. Effect of Housing on Performance of Growing-Finishing Pigs<sup>a</sup>

	Enclosed			Open-front		
	To 220 lb.	To 160 lb. <sup>b</sup>	To 120 lb. <sup>b</sup>	To 220 lb.	To 160 lb. <sup>b</sup>	To 120 lb. <sup>b</sup>
<u>Avg Daily Gain, Lb.</u>						
51-120 lb.	1.53	1.50	1.48	1.70	1.64	1.67
51-160 lb.	1.52	1.48	1.53	1.68	1.66	1.65
51-220 lb.	1.50	1.52	1.62	1.65	1.66	1.61
120-160 lb.	1.50	1.44	1.63	1.65	1.70	1.61
120-220 lb.	1.48	1.57	1.74	1.61	1.69	1.58
160-220 lb.	1.46	1.66	1.82	1.59	1.69	1.56
<u>Feed Consumption, Lb.</u>						
51-120 lb.	4.06	4.03	4.01	4.50	4.39	4.47
51-160 lb.	4.47	4.39	4.33	4.78	5.04	4.88
51-220 lb.	4.68	5.07	5.11	5.21	5.78	5.12
120-160 lb.	5.20	5.02	4.88	5.27	6.17	5.60
120-220 lb.	5.11	5.77	6.00	5.68	6.82	5.53
160-220 lb.	5.05	6.27	6.74	5.96	7.26	5.49
<u>Feed/Gain</u>						
51-120 lb.	2.66	2.71	2.71	2.66	2.68	2.68
51-160 lb.	2.95	3.00	2.82	2.85	3.03	2.99
51-220 lb.	3.14	3.33	3.15	3.17	3.49	3.20
120-160 lb.	3.47	3.52	3.02	3.19	3.64	3.54
120-220 lb.	3.49	3.71	3.43	3.53	4.07	3.54
160-220 lb.	3.51	3.84	3.70	3.76	4.35	3.54

<sup>a</sup> Six lots of four pigs each per treatment. Avg initial wt., 51 pounds.

<sup>b</sup> Weight when moved to other type of house.

Table 3. Effect of Housing on Pig Performance by  
Periods Irrespective of Housing  
During Other Periods<sup>a</sup>

	Enclosed	Open-front
Initial to 120 lb.		
Avg daily gain, lb.	1.50	1.67
Avg daily feed, lb.	4.03	4.45
Feed/gain	2.69	2.67
120 to 160 lb.		
Avg daily gain, lb.	1.52	1.66
Avg daily feed, lb.	5.27	5.44
Feed/gain	3.51	3.28
160 to 220 lb.		
Avg daily gain, lb.	1.57	1.69
Avg daily feed, lb.	5.93	6.32
Feed/gain	3.80	3.77

<sup>a</sup> Each value represents the average of 18 lots of four pigs each.

Table 4. Effect of Movement of Pigs at 120 or 160 Pounds on Growth Performance<sup>a</sup>

	Weight when moved to other housing		
	Control	160 lb.	120 lb.
Initial to 120 lb.			
Avg daily gain, lb.	1.62	1.57	1.58
Avg daily feed, lb.	4.28	4.21	4.24
Feed/gain	2.66	2.70	2.70
120 to 160 lb.			
Avg daily gain, lb.	1.58	1.57	1.62
Avg daily feed, lb.	5.34	5.60	5.24
Feed/gain	3.33	3.56	3.28
160 to 220 lb.			
Avg daily gain, lb.	1.53	1.68	1.69
Avg daily feed, lb.	5.51	6.77	6.12
Feed/gain	3.64	4.10	3.62
Initial to 220 lb.			
Avg daily gain, lb.	1.58	1.59	1.62
Avg daily feed, lb.	4.95	5.43	5.12
Feed/gain	3.16	3.41	3.18

<sup>a</sup> Each value is the average of 12 lots of four pigs, six lots housed in an enclosed building and six lots in an open-front building.