1968

Effect of a Controlled Environment on the Performance of (1) Heavy and Light Weight Pigs and (2) Barrows and Gilts

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A.S. Series 68-28

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The trend in swine housing during recent years has been toward controlled environment buildings. These buildings generally contain slotted or partially slotted floors. Labor requirements in structures of this type are apt to be less than with conventional type buildings. Also of concern to the pork producer is the performance of growing-finishing pigs in these buildings compared to the performance in less costly structures.

The purpose of the experiment reported herein was to study the performance of heavy and light weight pigs and also of barrows and gilts allotted separately when housed in different environmental conditions during December, January, and February.

Experimental Procedure

One hundred forty-four crossbred SPF pigs were assigned on December 18, 1967 to two replicates of four groups. One replicate was housed in an insulated, ventilated, controlled environment house while the other replicate was housed in an open front house with adjoining outside concrete pens where feed and water were available. The four groups in each house were: heavy weight pigs, light weight pigs, barrows and gilts. The heavy weight pigs averaged 110 pounds initially compared to 39 pounds for the light weight pigs. The complete ground mixed rations used in this trial are shown in table 1. A 16% protein ration was fed up to a weight of approximately 110 pounds and a 12% protein ration was fed from then to the end of the trial.

Results

Results of this trial are summarized in table 2. Several comparisons can be made in this data. The heavy weight pigs gained faster but required considerably more feed than the light weight pigs as might be expected, especially since the lighter pigs were fed from weights of about 40 to 150 pounds compared to the heavy pigs from 110 to 210 pounds. These groups contained a combination of barrows and gilts. The groups of barrows gained faster than the gilts when both were fed separately and also gained faster than the heavy weight pigs although averaging 45 to 50 pounds lighter initially. There did not appear to be any real difference in the feed efficiency of barrows or gilts when fed over a similar weight period.

The data of all 72 pigs fed in each type of house was combined in order to compare the two types of housing. Pigs housed in the controlled environment house had an average daily gain of 1.65 pounds per day and required 3.42 pounds of feed per pound of gain compared to a daily gain of 1.70 and feed efficiency of 3.46 for the pigs in the uninsulated, open front house. These data support previous research which also indicated pigs housed in the open front type building gained equally as well as those in a more controlled environment. However, in previous work considerably more feed has been required by pigs in the open front house. The winter of 1967-68 was much milder than normal with almost complete absence of snow during this period which may account for the better performance this past winter.

Summary

Pigs from 110 to 210 pounds gained about 7% faster but required 24% more feed per unit of gain than pigs from 40 to 150 pounds. Barrows gained about 9% faster than gilts with essentially the same feed efficiency. The performance of pigs housed in a controlled environment building was similar to that of pigs housed in an uninsulated, open front building with outside feeding area.

Table 1. Composition of Rations, Percent (Winter 1967-68)

	To 110 lb.	110 to market
Ground yellow corn	76.8	87.2
Soybean meal, 44%	20.0	10.0
Dicalcium phosphate	1.5	1.0
Ground limestone	0.7	0.8
Trace mineral salt	0.5	0.5
Vitamin-antibiotic mix[a]	0.5	0.5

[a] Provided 1500 I.U. vitamin A, 150 I.U. vitamin D, 1 mg. riboflavin, 2.5 mg. calcium pantothenate, 7.5 mg. niacin, 50 mg. choline, 5 mcg. vitamin B_{12} and 5 mg. oxytetracycline per pound of ration.

Table 2. Results of Winter Trial (1967-68)

	Heavy Pigs	Light Pigs	Barrows	Gilts
Controlled Environment House				
No. of pigs	18	18	18	18
Av. initial wt., lb.	109.5	39.4	59.2	68.1
Av. final wt., lb.	207.3	149.3	182.3	183.1
Av. daily gain, lb.	1.69	1.55	1.73	1.62
Av. daily feed, lb.	6.37	4.83	5.89	5.50
Av. feed per lb. gain, lb.	3.78	3.12	3.40	3.39
Uninsulated House				
No. of pigs	18	18	18	18
Av. initial wt., lb.	110.4	38.1	64.6	66.3
Av. final wt., lb.	210.3	154.3	193.2	182.8
Av. daily gain, lb.	1.72	1.64	1.81	1.64
Av. daily feed, lb.	6.62	4.84	6.49	5.68
Av. feed per lb. gain, lb.	3.84	2.95	3.59	3.46