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Two Year Summary of the Performance of Finishing Pigs in Hoop Structures and Confinement during Winter and Summer

Mark S. Honeyman
Iowa State University, honeyman@iastate.edu

Jay D. Harmon
Iowa State University, jharmon@iastate.edu

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Abstract
The objectives of the study were to document the performance of finishing pigs in hoops during the summer and winter, and to evaluate pig performance in hoops compared with pigs in a confinement housing system.

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Animal Science, Agriculture and Biosystems Engineering

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M.S. Honeyman, associate professor;
Department of Animal Science
J.D. Harmon, associate professor,
Department of Agriculture and Biosystems Engineering

Introduction

The objectives of the study were to document the performance of finishing pigs in hoops during the summer and winter, and to evaluate pig performance in hoops compared with pigs in a confinement housing system.

Materials and Methods

For each trial, three groups of pigs were placed in three (30 ft. x 60 ft.) bedded hoop structures (150 pigs per hoop). The fourth group was placed in a mechanically ventilated modular confinement building with slatted floors with six pens (22 pigs per pen). The three hoops and confinement were filled over a three-week period or less. Each unit was filled with one delivery of pigs that were weaned at the same time. The pigs were injected with ivermectin and vaccinated for erysipelas at the beginning of the trials. The pigs were wormed with Safeguard in the feed at approximately 120 lb. A total of 2,249 pigs was marketed over the duration of the four trials (two summer and two winter).

The stocking densities for finishing pigs in hoop structures was 12 ft^2 per pig and 8 ft^2 per pig in confinement. With 12 ft^2 per pig, each (30 ft x 60 ft) hoop structure was designed to hold 150 pigs. The confinement pens (13.5 ft x 13 ft) were designed to hold 22 pigs per pen. In the trials, a hoop is defined as a pen. There were three pens of hoop pigs and six pens of confinement pigs for each of the four trials. All pigs were from terminal Duroc boars crossed on predominantly white sows. The pigs were a mixture of barrows and gilts.

Pigs were fed ad libitum. All diets were corn and soybean meal based. The hoop structures were operated as cold facilities that used cornstalk bales for deep bedding.

Results and Discussion

The hoop pigs ate more feed per day than the confinement pigs. The average daily feed intake (ADFI), which is the feed disappearance less the feed consumed by pigs that were not marketed (culls and mortalities), was 5% more for the hoop pigs ($P<.001$) (5.27 vs. 5.01 lb/d). If the feed for the pigs not marketed (culls and mortalities) was included, the average daily feed intake (AllADFI) was 4% more for the hoops ($P<.05$) (5.36 vs. 5.15 lb/d) (Table 1).

The hoop pigs grew approximately 3% faster than the confinement ($P<.001$) (1.80 vs. 1.75 lb/d) (Table 1). However, the hoop pigs were less efficient in converting feed to liveweight gain. The feed efficiency with feed removed for culls and mortalities (F/G) was 3% poorer for the hoop pigs ($P<.05$) (2.94 vs. 2.86 lb feed/lb gain). The feed efficiency with the feed for culls and mortalities included (AllF/G) was approximately 2% poorer for the hoop pigs ($P<.05$) (2.99 vs. 2.94 lb feed/lb gain) (Table 1).

The mortality rate was similar (3.9 vs. 3.4%) for hoops and confinement. The percentage of pigs that were culled or did not weigh 220 lb at marketing (lights) was 3.1% for hoops and 1.7% for confinement. This may be due to the larger number of pigs per pen in the hoops.

The pigs were scanned at approximately 245 lb. The hoop pigs were 7% fatter ($P<.01$) (.88 vs. .82 in.) and had 5.5% smaller loineyes ($P<.001$) (6.14 vs. 6.50 sq. in.). The same trend was observed when the values were adjusted to 250 lb.

The carcasses from the hoop pigs had less lean (P<.001) (50.4 vs. 51.8%) and lower yield (P<.001) (74.3 vs. 75.6%) than the confinement pig carcasses. The rate of lean gain was less (P<.05) and efficiency of lean gain was 8% more (P<.001) for the hoop pigs than the confinement pigs.

For a complete report of this project, contact M.S. Honeyman, 515-294-4621, honeyman@iastate.edu, or visit the website http://www.extension.iastate.edu/ipic/reports.

Table 1. Performance of pigs fed in hoops and confinement (4 trials, 2 years).

	Hoops		Confinement		
Measure	Mean	SEM	Mean	SEM	
Start weight, lb	34.5	0.7	33.9	0.5	
End weight, lb	257.9	1.3	254.4	0.9	
Weight gain, lb	223.5	1.5	220.5	1.1	
Days on feed	125.4	1.2	127.0	0.8	
Adjusted days to 250	168.9	0.8	169.5	0.5	
Bedding use per pig, lb	220.1		0		
ADFI, lb/day[a]	5.27	.04	5.01	.03	***
ADG, lb/day	1.80	.01	1.75	.01	***
Feed/Gain, lb feed/lb gain[b]	2.94	.02	2.86	.02	*
AllADFI, lb/day[a]	5.36	.05	5.15	.04	**
AllF/G, lb feed/lb gain[b]	2.99	.03	2.94	.02	*
Mortality, %	3.9	--	3.4	--	
Lights, %[c]	3.1	--	1.7	--	
Scan liveweight, lb	243.4	1.5	244.6	1.0	
Test period, days	118.4	1.2	121.0	0.8	
Backfat, in.	0.88	.01	0.82	.01	**
Loin muscle area, sq. in.	6.14	.06	6.50	.04	***
Adjusted backfat, in.	.90	.01	.84	/01	***
Adjusted LMA, sq. in.	6.25	.05	6.59	.04	***
Lean, lb/pig	90.4	.7	93.7	.5	***
Lean, %	50.4	.2	51.8	.1	***
Lean gain, lb/day on test	.68	.01	.69	.01	*
FFLI, %	47.2	.1	47.8	.1	**
Efficiency of lean gain, lb feed/lb lean gain	7.67	.09	7.09	.06	***
Yield, %	74.3	.2	75.6	.1	***

SEM = standard error of the mean.
[a]ADFI=Feed disappearance less the feed consumed by pigs that were not marketed ÷ number of pigs marketed ÷ days on feed.
AllADFI = Feed disappearance ÷ pigs marketed ÷ days on feed.
[b]F/G = ADFI ÷ ADG.
AllF/G = AllADFI ÷ ADG.
[c]Lights = pigs not weighing 220 lb at marketing.
*P<.05, **P<.01, ***P<.001.