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Robert H. Hines

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Whey, steam rolled or whole oats, and fishmeal or meat and bone scraps for weaned pigs

Abstract

In two feeding trials, the use of whey, steam rolled or ground oats, fishmeal or meat and bone scraps in starter diets for the weaned pig was evaluated. In Trial I, pigs fed the basal corn-soybean meal diet gained 5% slower than pigs fed diets containing 8.75% whey, with either 8.75% steam rolled or ground oats and 2.5% fishmeal or meat and bone scraps. The pounds of feed required per pound of gain were similar for all diets, resulting in the cheapest gain with the corn-soybean meal basal diet. In Trial II, 192 lighter pigs were used (13 to 24 lbs., initial weight) with similar results. No significant difference was observed in rate of gain, average daily feed intake, or feed efficiency when whey, steamed rolled or ground oats, or fishmeal or meat and bone scraps were added to the basal ration. All diets contained approximately 17.5% crude protein, 1.08% lysine, .88% calcium, and .75% phosphorus. No beneficial effect seemingly is gained using more expensive feedstuffs (steam rolled oats and fishmeal) than more common feeds (ground oats and meat and bone scraps). The cheapest feed. cost per lb. of gain in both trials was observed with the basal corn-soybean meal fortified diet.; Swine Day, Manhattan, KS, November 12, 1981

Keywords

Swine day, 1981; Kansas Agricultural Experiment Station contribution, no. 82-128-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 406; Swine; Whey; Steam rolled; Whole oats; Fishmeal; Meat and bone scraps; Weaning

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Whey, Steam Rolled or Whole Oats, and Fishmeal
or Meat and Bone Scraps for Weaned Pigs

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R.H. Hines

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Summary

In two feeding trials, the use of whey, steam rolled or ground oats, fishmeal or meat and bone scraps in starter diets for the weaned pig was evaluated. In Trial I, pigs fed the basal corn-soybean meal diet gained 5% slower than pigs fed diets containing 8.75% whey, with either 8.75% steam rolled or ground oats and 2.5% fishmeal or meat and bone scraps. The pounds of feed required per pound of gain were similar for all diets, resulting in the cheapest gain with the corn-soybean meal basal diet. In Trial II, 192 lighter pigs were used (13 to 24 lbs., initial weight) with similar results. No significant difference was observed in rate of gain, average daily feed intake, or feed efficiency when whey, steamed rolled or ground oats, or fishmeal or meat and bone scraps were added to the basal ration. All diets contained approximately 17.5% crude protein, 1.08% lysine, .88% calcium, and .75% phosphorus. No beneficial effect seemingly is gained using more expensive feedstuffs (steam rolled oats and fishmeal) than more common feeds (ground oats and meat and bone scraps). The cheapest feed cost per lb. of gain in both trials was observed with the basal corn-soybean meal fortified diet.

Introduction

Nutrition of the weaned pig continues to provide problems for commercial swine producers. Starter diets containing high quality expensive feedstuffs may not be necessary to maintain average daily feed intake of the weaned pig. A two-week impaired growth period, usually observed after weaning results from low feed intake. In this study, less expensive feeds (whole ground oats and meat and bone scraps) were evaluated against more expensive feeds (steamed rolled oats and fishmeal) on the performance of the weaned pig.

Procedure

Trial 1. Ninety Yorkshire weaned pigs averaging 27 lbs. were allotted to ten pens, two replications of five treatments. The pigs were raised in the controlled environment KSU nursery in pens 5'x 11' with a plastic slatted floor. Each pen was equipped with a two-hole self feeder and a nipple waterer. The diets evaluated are listed in Table 22. The basal diet was a corn-soybean meal fortified diet with a calculated analysis of 17.5% crude protein, 1.08% lysine, .85% calcium, and .75% phosphorus. All diets were formulated to be similar in percentage of crude protein, lysine, calcium, and phosphorus.

Trial II. One hundred ninety-two Yorkshire weaned pigs were allotted to four replications of eight treatments (6 pigs per pen). The pigs were reared in the new KSU nursery in pens 4'x 5' with a woven wire floor. Each pen contained a nursery feeder (5 holes) and a nipple waterer. Nursery temperature was maintained at 85⁰-90⁰F the first 2 weeks and reduced to 80⁰ the remaining 3 weeks of the feeding trial. Diets used in Trial II were the same as Trial I, with these added diets: 1) 8.75% whey, 2) 8.75% whey + 8.75% steamed rolled oats, and 3) 8.75% whey + 8.75% whole ground oats.

Table 22. Rations Fed to Weaned Pigs

Ingredients: lbs/ton	Basal	Whey +		Whey +		Whey +		Whey +	
		Whey	r.oats	Whey +	oats	r.oats	g.oats	r.oats	g.oats
Gr. yellow corn	1393	1300	1100	1100	1128	1128	1136	1136	
Soybean meal (44%)	520	500	450	450	400	400	400	400	
Dried whey	--	175	175	175	175	175	175	175	
St. rolled oats	--	--	175	--	175	--	--	--	
Gr. oats	--	--	--	175	--	175	--	175	
Fishmeal (menhaden)	--	--	--	--	50	50	--	--	
Meat & bone scrapes	--	--	--	--	--	--	50	50	
Dicalcium phosphate	40	35	36	37	30	30	22	22	
Gr. limestone	18	20	19	19	15	15	13	13	
L-lysine HCL	5	3	5	5	3	3	5	5	
Trace mineral (Z-10)	2	2	2	2	2	2	2	2	
Vitamin premix	10	10	10	10	10	10	10	10	
Salt	5	5	5	5	5	5	5	5	
Mecadox	5	5	5	5	5	5	5	5	
Banminth	2	2	2	2	2	2	2	2	
<u>Calculated analysis:</u>									
C. protein, %	17.47	17.66	17.11	16.76	17.51	17.16	17.26	16.91	
Lysine, %	1.08	1.06	1.08	1.07	1.06	1.06	1.09	1.09	
Calcium, %	.85	.88	.88	.88	.88	.88	.88	.89	
Phosphorous, %	.75	.75	.75	.75	.75	.74	.74	.73	

Results and Discussion

Table 23 presents the performance of weaned pigs fed diets with steam rolled or ground oats with either fishmeal or meat and bone scrapes. The pigs, with an average initial weight of 27 lbs., were on trial for five weeks. Pigs fed the corn-sorghum meal diet gained an average of 5% slower than pigs fed diets containing the steam rolled or whole oats and the animal protein. The feed per lb. of gain was similar for all groups, resulting in the cheapest feed cost per lb. of gain for the corn-soybean meal basal ration. Though daily feed intake favored the more complex rations, the difference was not significant.

Table 23. Performance of Weaned Pigs Fed Steam Rolled Oats or Whole Oats With Fishmeal or Meat and Bone Scraps. (Trial I)

Diet:	Corn- soy	R. oats + fishmeal	W. oats + fishmeal	R. oats + m & bone	W. oats + m & bone
No. pigs/treatment	18	18	18	18	18
Avg. int. wt., lbs.	27.3	27.6	26.7	27.9	27.0
Avg. final wt., lbs.	71.6	74.8	72.8	73.8	73.9
Avg. daily gain, lbs.	1.26	1.35	1.32	1.31	1.34
Avg. daily feed int., lbs.	2.54	2.71	2.60	2.60	2.73
Feed/gain	2.00	2.01	1.97	1.98	2.04
Feed cost/lb. gain, ¢	20.03	23.6	21.2	21.6	21.3

The results of Trial II are presented in table 24. Four replications of eight treatments began at weaning with a variation in weight initially from 13 to 24 lbs. Even with the variation in initial weight, all replicates performed similarly with no significant difference observed among treatments. The average daily gain of pigs fed the eight diets was similar. The average daily feed intake was lower for the corn-soybean meal basal diet; however, average daily gain was not reduced thus resulting in the best feed gain ratio and the cheapest feed cost per lb. of gain.

Table 24. Performance of Weaned Pigs (Trial II)

Average daily gain, lbs.	Corn soy	Whey		Whey	Whey	Whey	Whey	Whey
		Whey	r.oats	oats	r.oats + fish	oats + fish	oats + m&bone	oats + m&bone
Rep 1	.96	.95	1.04	1.01	.99	.91	.92	.96
Rep 2	1.03	1.05	1.03	1.03	1.02	1.04	1.07	1.07
Rep 3	.99	1.06	1.02	1.06	.91	1.04	1.06	1.00
Rep 4	<u>1.21</u>	<u>1.13</u>	<u>.97</u>	<u>1.16</u>	<u>1.21</u>	<u>1.27</u>	<u>1.24</u>	<u>1.08</u>
	1.05	1.06	1.02	1.06	1.04	1.06	1.07	1.03
Feed/gain								
Rep 1	1.64	1.82	1.84	1.72	1.84	1.66	1.74	1.74
Rep 2	1.93	2.01	2.02	1.88	1.98	1.91	1.97	1.91
Rep 3	1.69	1.65	1.75	1.77	1.99	1.76	1.82	1.68
Rep 4	<u>1.93</u>	<u>2.01</u>	<u>2.02</u>	<u>1.88</u>	<u>1.98</u>	<u>1.91</u>	<u>1.97</u>	<u>1.91</u>
	1.77	1.82	1.87	1.80	1.92	1.79	1.86	1.82
Feed cost/lb. gain, ¢	18.0	18.9	10.5	18.9	21.5	19.3	20.2	19.0

Rep 1 - 6 pigs/trt., avg. int. wt. 13 lbs., final wt. 46 lbs.
 Rep 2 - 6 pigs/trt., avg. int. wt. 15 lbs., final wt. 51 lbs.
 Rep 3 - 6 pigs/trt., avg. int. wt. 18 lbs., final wt. 54 lbs.
 Rep 4 - 6 pigs/trt., avg. int. wt. 24 lbs., final wt. 65 lbs.

Cheaper feedstuffs (ground oats and meat and bone scrapes) supported gain and feed efficiency equal to those observed for pigs fed the more expensive feedstuffs (steamed rolled oats and fishmeal).