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Response of growing and finishing swine to a dietary source of lactobacillus acidophilus

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Response of growing and finishing swine to a dietary source of lactobacillus acidophilus

Abstract

Post-weaning comparisons were made using high and low protein rations with and without a fermentation product (lactobacillus acidophilus). Pigs receiving higher protein rations (18%) grew slightly faster than those receiving low protein (15%) rations; however, the differences were not significant. Adding a fermentation product to either ration tested did not significantly improve performance of weaned pigs. Finishing swine were used to compare high-protein (16%) ration and low-protein (13%) rations with and without the fermentation product. Pigs receiving the higher-protein ration grew significantly faster than those receiving the lower-protein ration with or without the additive. Pigs receiving the additive in the 13% ration grew slightly faster than pigs receiving the 13% ration without the additive.; Swine Day, Manhattan, KS, October 7, 1971

Keywords

Swine day, 1971; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 181; Swine; Growing pigs; Finishing pigs; Lactobacillus acidophilus

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Response of Growing and Finishing Swine To A Dietary Source of Lactobacillus Acidophilus

R. H. Hines and B. A. Koch

Summary

Post-weaning comparisons were made using high and low protein rations with and without a fermentation product (lactobacillus acidophilus). Pigs receiving higher protein rations (18%) grew slightly faster than those receiving low protein (15%) rations; however, the differences were not significant. Adding a fermentation product to either ration tested did not significantly improve performance of weaned pigs.

Finishing swine were used to compare high-protein (16%) ration and low-protein (13%) rations with and without the fermentation product. Pigs receiving the higher-protein ration grew significantly faster than those receiving the lower-protein ration with or without the additive. Pigs receiving the additive in the 13% ration grew slightly faster than pigs receiving the 13% ration without the additive.

Procedure

A. Growing Phase. Sixty-eight pigs (Hamps, Durocs, and Yorks) averaging approximately 45 lbs each were divided into four, replicated treatment groups on the basis of breed, sex, litter, and weight to receive these rations: (1) 18% crude protein basal, (2) 18% basal plus 1 pound of fermentation product per ton, (3) 15% crude protein basal, (4) 15% basal plus 1 pound of fermentation product per ton.

During this study pigs were in the nursery where pens are totally slatted above a circulating oxidation ditch. Each 6' x 11' pen contains an automatic waters and a 2-hole self-feeder.

Rations fed the post-weaning pigs are presented in Table 26.

B. Finishing Phase. Forty pigs (Hamps, Durocs, and Yorks) averaging approximately 100 lbs were divided into 4 groups on the basis of sex, breed, litter, and weight. Treatment groups were as follows: (1) 16% crude protein basal ration, (2) 16% basal ration plus 1 pound of fermentation

product per ton, (3) 13% crude protein basal ration, and (4) 13% basal ration plus 1 pound of fermentation product per ton. The pigs were housed in an environmentally-controlled, finishing barn with concrete slats and a circulating oxidation ditch below. Each pen of ten pigs had access to an automatic waterer and a two-hole self feeder at all times.

Rations fed to the finishing pigs are detailed in Table 27.

Table 26. Composition of Post-weaning Rations[1]

Protein %	18% protein ration	15% protein ration
Ingredients, lbs/ton		
Gd. yellow corn	963	1063
St. rolled oat groats	200	200
Alfalfa meal, 17%	50	50
Soybean meal, 50%	300	200
Meat & bone scraps	75	75
Edible fat	50	50
Milk nut. conc.	200	200
Sugar	100	100
Salt	5	5
Dicalcium phosphate	10	10
Gr. limestone	10	10
TNT[2]	25	25
Trace minerals	2	2
Vitm-premix[3]	10	10

[1]Fermentation product (lactobacillus acidophilus) was added to the basal rations at 1 pound per ton.

[2]TNT contains 100 grams of terramycin; 100 grams neomycin sulfate and 10,000,000 U.S.P. units of vit. A.

[3]Vitm-premix contains 900,000 IU of vit. D; 48 grams of niacin; 16 grams of riboflavin; 32 grams of D. pantothenic acid; 160 grams of choline chloride; 40 mg. of vit. B_{12}; 88 grams of vit. E.

Results and Discussion

Table 28 presents performance data for the post-weaning period. Pigs on the 18% protein ration grew faster than

pigs on the 15% protein ration. Differences were nonsignificant for rate of gain, daily feed intake, and feed gain ratio.

The pigs receiving the 15% protein ration grew 12% faster and were 5% more efficient than pigs receiving the 15% ration with the fermentating product. Daily feed intake was slightly lower for pigs on lower protein rations.

Table 27. Composition of Finishing Rations[1]

	16% protein ration	13% protein ration
Ingredient, lbs/ton		
Gd. sorghum grain	1525	1748
Soybean meal (44%)	400	175
Dicalcium phosphate	28	30
Gr. limestone	20	20
Salt	10	10
Trace minerals	2	2
Aureo SP-250	5	5
Vitm-premix[2]	10	10

[1]Fermentation product (lactobacillus acidophilus) was added to the basal rations at the rate of 1 pound per ton.

[2]Vitm-premix contains 3,500,000 IU of vit. A; 600,000 IU of vit. D; 10 mg. vit. B_{12}; 26 gm. niacin; 9 gm. riboflavin; 18 gm. of D. pantothenic acid; 88 gm. choline chloride.

Table 29 presents performance data for swine from approximately 110 lbs to 215 lbs. The pigs on 16% protein grew significantly faster than any other group. In addition, they required approximately 10% less feed per pound of gain. The remaining three lots performed similarly with no significant differences. The pigs receiving the 13% ration plus the fermentation product grew 5% faster and were slightly more efficient than the pigs on the 13% ration without the fermentation product.

Table 28. High and Low Protein Levels With and Without Lactobacillus Acidophilus (a fermentation product) for Post-Weaning Rations

Protein level	18% protein		15% protein	
Additive:	Control	L.A.	Control	L.A.
No. pigs, rep. 1	9	9	9	9
No. pigs, rep. 2	8	8	8	8
Initial wt., lbs., rep. 1	48.6	49.7	47.2	47.8
Initial wt., lbs., rep. 2	43.5	42.5	41.6	41.1
	46.0	46.1	44.4	44.4
Final wt., lbs., rep. 1	95.9	97.6	93.8	85.8
Final wt., lbs., rep. 2	89.1	88.9	85.7	83.1
	92.5	93.2	89.8	84.4
Avg. daily gain, lbs., rep. 1	1.35	1.37	1.33	1.09
Avg. daily gain, lbs., rep. 2	1.30	1.32	1.26	1.20
	1.32	1.34	1.29	1.14
Avg. daily feed, lbs., rep. 1	3.33	3.31	3.20	2.81
Avg. daily feed, lbs., rep. 2	3.09	3.15	2.93	2.88
	3.21	3.23	3.06	2.84
Feed/lb. gain, rep. 1	2.46	2.42	2.41	2.58
Feed/lb. gain, rep. 2	2.37	2.39	2.33	2.40
	2.41	2.40	2.37	2.49
Length of trial, days	35	35	35	35

Table 29. High and Low Protein Rations With and Without Lactobacillus Acidophilus for Finishing Swine

Protein level:	16% protein		13% protein	
Additive:	Control	L.A.	Control	L.A.
No. pigs	10	10	9[1]	10
Initial wt., lbs.	109.6	114.6	114.4	110.5
Final wt., lbs.	221.3	214.5	212.3	211.4
Avg. daily gain, lbs.	1.86*	1.66	1.61	1.68
Avg. daily feed, lbs.	5.81	5.69	5.78	5.93
Feed/lb/gain	3.13	3.42	3.59	3.53
Length of trial, days	61	61	61	61

*Significant at $P<.05$

[1]One lame pig removed the day the trial started.