Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 10 *Swine Day (1968-2014)*

Article 101

1975

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Abstract

Seventy-two pigs, 30 days old averaging 17 pounds initially, were used to evaluate lysine additions to 16 and 18 percent protein fortified corn-soybean meal diets. Adding 0.1% or 0.2% L-lysine to the 16% protein diet increased weight gains. Gain and efficiency of pigs fed the 16% protein diet supplemented with 0.2% L-lysine were similar to that of pigs fed the 18% protein corn-soybean meal diet. Adding lysine to the 18% protein diet improved neither gains nor feed efficiency of pigs weaned at four weeks of age.; Swine Day, Manhattan, KS, November 13, 1975

Keywords

Swine day, 1975; Kansas Agricultural Experiment Station contribution; no. 505; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 283; Swine; Protein; Lysine; Weaned pigs

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Protein Level and Lysine Supplementation of Diets for Weaned Pigs

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Summary

Seventy-two pigs, 30 days old averaging 17 pounds initially, were used to evaluate lysine additions to 16 and 18 percent protein fortified corn-soybean meal diets. Adding 0.1% or 0.2% L-lysine to the 16% protein diet increased weight gains. Gain and efficiency of pigs fed the 16% protein diet supplemented with 0.2% L-lysine were similar to that of pigs fed the 18% protein corn-soybean meal diet. Adding lysine to the 18% protein diet improved neither gains nor feed efficiency of pigs weaned at four weeks of age.

Introduction

This study is a part of a cooperative experiment with other experiment stations in the North Central Region.

Procedures

Seventy-two weaned pigs 30 days old and averaging 17 pounds were assigned to 12 pens representing two replications of the six dietary treatments. Pigs were randomly assigned to treatments based on litter and initial weight. Each group of six pigs was confined in a totally saltted floor pen equipped with an automatic waterer in an environmentally controlled (75-80° F) nursery. All diets were self-fed as 3/16 inch pellets. The composition of the basal 16 and 18% protein diets is shown in table 12. The diets were supplemented with 0.1 or 0.2% L-lysine to provide the following treatments:

1) 16% protein basal diet
2) 16% protein diet + 0.10% L-lysine
3) 16% protein diet + 0.20% L-lysine
4) 18% protein basal diet
5) 18% protein + 0.10% L-lysine
6) 18% protein + 0.20% L-lysine

The trial lasted 28 days.

Results and Discussion

Adding lysine to the 16% protein diet improved daily gain (table 13). Pigs fed the 16% protein diet supplemented with 0.2% L-lysine gained at the same rate and were just as efficient in feed utilization as pigs fed the 18% protein corn-soybean diet. Lysine added to the 18% protein corn-soybean meal diet improved neither daily gain nor feed efficiency.

The lack of response to added lysine in the 18% protein diet suggests that lysine (0.90%) in that diet was adequate for pigs weighing 17 pounds.

These results confirm those of previous studies we have conducted.

Table 12. Percentage composition of diets.

Ingredient	Protein, % 16	18
Corn	76.4	71.2
Soybean meal, solvent 48.5% protein	19.3	24.5
Dicalcium phosphate 21% phosphorus	1.5	1.5
Limestone	1.3	1.3
Salt	0.5	0.5
Vitamin,[1] trace-mineral[2] and antibiotic[3] premix	1.0	1.0
	100.0	100.0
Crude protein, %	16.0	18.0
Lysine, %	0.76	0.90
Calcium	0.90	0.91
Phosphorus	0.60	0.62

[1]Provided per ton of complete diet: Vitamin A, 4,000,000 IU; Vitamin D_3, 300,00 IU; Vitamin E, 20,000 IU; riboflavin, 45 g; niacin, 25 g; pantothenic acid, 12 g; Vitamin B_{12}, 22 milligrams.

[2]Provided in the complete diet (ppm): Zinc, 100; iron, 100; manganese, 100; copper, 10.0; iodine 3.0; cobalt 1.0.

[3]Provided 100 g chloretetracycline, 100 g sulfamethazine, and 50 g procaine penicillin per ton of complete diet.

Table 13. Performance of pigs fed 16 or 18% protein diets supplemented with lysine[a]

Protein, %	16			18		
Lysine added, %	0	0.10	0.20	0	0.10	0.20
Daily gain, lb.	0.75[b]	0.81[b,c]	0.89[c]	0.92[c]	0.91[c]	0.90[c]
Daily feed, lb.	1.43	1.58	1.56	1.60	1.51	1.46
Feed/gain	1.92[b]	1.96[b]	1.75[c]	1.75[c]	1.65[c]	1.62[c]

[a]Each value is the mean of 12 pigs averaging 17 pounds initially.

[b,c]Means with different superscripts differ significantly ($P<.05$).