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Effect of grain source and 0 or 4% added fat on performance of finishing pigs

Abstract

Seventy-two crossbred finishing pigs averaging 55.9 kg. (123.0 lbs.) were used (in a 3 x 2 factorial design) to compare performance when fed sorghum, corn, or wheat with 0 or 4% added fat (tallow). There were no significant differences in average daily gain or feed efficiency among pigs fed sorghum, corn, or wheat. Adding 4% fat (to each grain ration) resulted in a slight improvement in gain and an improved feed efficiency. Pigs fed wheat with 4% fat added showed The greatest improvement in daily gain and feed efficiency.; Swine Day, Manhattan, KS, November 10, 1977

Keywords

Swine day, 1977; Kansas Agricultural Experiment Station contribution; no. 78-101-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 312; Swine; Grain; Fat; Performance; Finishing pigs; Tallow

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Summary

Seventy-two crossbred finishing pigs averaging 55.9 kg. (123.0 lbs.) were used (in a 3 x 2 factorial design) to compare performance when fed sorghum, corn, or wheat with 0 or 4% added fat (tallow). There were no significant differences in average daily gain or feed efficiency among pigs fed sorghum, corn, or wheat. Adding 4% fat (to each grain ration) resulted in a slight improvement in gain and an improved feed efficiency. Pigs fed wheat with 4% fat added showed the greatest improvement in daily gain and feed efficiency.

Introduction

Interest in feeding wheat to swine depends largely on the price of wheat in relation to other cereal grains. Earlier this year (1977), when it was competitively priced with other cereal grains, producers became interested in wheat as an ingredient in swine rations. Wheat (hard red winter) contains approximately the same energy content as corn or sorghum and is higher in protein content. Wheat contains a higher level of the critical essential amino acids for swine, lysine, tryptophan, and threonine. Normally wheat contains 0.1% more lysine than corn or sorghum.

We evaluated corn, sorghum, and wheat in rations for finishing pigs with each ration formu-

lated on a lysine basis so that we could take advantage of the increased lysine content of wheat. We also determined the effect of adding 0 or 4% fat to each grain source.

Experimental Procedure

Seventy-two crossbred pigs averaging 55.9 kg. (123.0 lbs.) were randomly allotted, from outcome groups (formed on the basis of sex and initial weight), to six treatments: three grain sources (sorghum, corn, or wheat), each with 0 and 4% added fat (tallow). Pigs were housed six per pen in a modified open-front building. Performance data were summarized on an equal-time basis when pigs in a replicate averaged 100 kg. (220 lbs.). The experiment was conducted from April through June of 1977.

Composition of the three rations containing no added fat is shown in table 4. Each ration was formulated on a lysine basis, to allow maximum use of the increased lysine content of wheat. The wheat used in this experiment contained 0.35% lysine. Rations containing sorghum and corn were formulated on the assumption that each grain contained 0.24% lysine. When fat (4% tallow) was added, synthetic lysine was also added to maintain a constant calorie-lysine ratio.

Table 4 . Composition of rations fed finishing pigs.

Grain source	Sorghum	Corn	Wheat
Ingredient	Pounds/ton		
Sorghum	1625		
Corn		1625	
Wheat, hard red winter			1715
Soybean meal	300	300	214
Dicalcium phosphate	26	26	20
Limestone	22	22	24
Salt	10	10	10
Vitamin mix	10	10	10
Trace mineral mix	2	2	2
Antibiotic	5	5	5
	<u>2000</u>	<u>2000</u>	<u>2000</u>
Lysine, %	0.60	0.60	0.60
Calcium, %	0.70	0.70	0.70
Phosphorus, %	0.61	0.61	0.62

Results and Discussion

Average daily gain and feed efficiency of finishing pigs were similar for all grain sources (table 5). Adding 4% fat resulted (for each ration) in a slight improvement in average daily gain and a significant ($P<.05$) improvement in feed efficiency. Pigs fed the wheat ration with 4% fat added showed the greatest improvement in daily gain and feed efficiency, perhaps partially because of the ration's improved physical characteristics. (Although wheat was coarse ground, the ration with no added fat was dusty.)

Formulating rations on a lysine basis allowed

us to take maximum advantage of the increased lysine content of wheat. This study demonstrates that finishing pigs fed a wheat ration formulated on a lysine basis will perform similarly to those on corn or sorghum; and that feeding the rations will save 86 pounds of soybean meal per ton of complete feed.

The decision to feed wheat to swine should be based on economics. Swine producers should not hesitate to feed wheat when it is economically feasible.

Table 5 . Effect of grain source and 0 or 4% added fat on performance of finishing pigs.^a

Grain source	Sorghum	Corn	Wheat	Sorghum	Corn	Wheat
Fat added, %	0	0	0	4	4	4
Avg. daily gain, lbs. ^b	1.72	1.64	1.64	1.76	1.75	1.85
Daily feed lbs.	5.33	5.28	5.22	5.14	5.18	4.70
Feed/gain ^b	3.10	3.22	3.18	2.92	2.96	2.85

^aEach value represents the mean of two pens of six pigs each. Average initial weight, 55.9 kg. (123 lbs.); average final weight, 97.9 kg. (215.4 lbs.).

^bSignificant ($P<.05$) effect of fat level.