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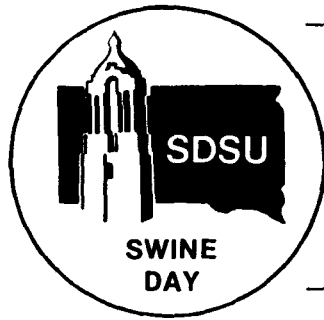
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INFLUENCE OF SUPPLEMENTAL DIETARY POTASSIUM
ON PERFORMANCE OF GROWING-FINISHING SWINE
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Potassium is one of the mineral nutrients that has been considered to be present in adequate amounts in swine diets formulated with commonly used feed ingredients. However, nutrient contents of feed ingredients have been shown to change with intensive cropping practices and also with different feed processing procedures. Recent research has indicated that potassium may improve the utilization of lysine, particularly in diets containing lysine below recommended levels.

This study was conducted to evaluate the performance of growing-finishing pigs fed different levels of supplemental dietary potassium and to evaluate the effect of previous dietary lysine treatment on subsequent performance.

Experimental Procedure

Seventy-two weanling pigs from a group of 96 pigs that had received diets of 0, .4 and .8% supplemental potassium from potassium chloride during a previous 4-week experiment were reallocated to their same potassium treatments. There were six pens of four pigs each per treatment. Half of the pigs in each potassium group had received diets containing 1.15% lysine and the other half diets of .85% lysine for a 4-week period prior to this experiment.

The pigs were housed in an enclosed, slotted floor building. Average initial weight was approximately 53 pounds. Pigs were fed diets containing .78% lysine to an average weight of about 110 pounds and diets of .63% lysine from 110 to 220 pounds. Composition of the diets is shown in table 1 for each of the three treatments that were as follows:

1. Basal diet
2. Basal diet plus .4% added potassium
3. Basal diet plus .8% added potassium

TABLE 1. COMPOSITION OF DIETS (%)

Treatment	To approximately 110 lb			110-220 lb		
	1	2	3	1	2	3
Corn	83.5	82.7	81.9	87.5	86.7	85.9
Meat meal	8	8	8	5.5	5.5	5.5
Fish meal	3	3	3	3.0	3.0	3.0
Soybean meal, 44%	5	5	5	3.5	3.5	3.5
Trace mineralized salt	.25	.25	.25	.25	.25	.25
Potassium chloride	---	.8	1.6	---	.8	1.6
Vitamin-antibiotic mix ^a	.25	.25	.25	.25	.25	.25

^aSupplied per pound of diet: vitamin A, 1500 IU; vitamin D, 150 IU; vitamin E, 3 IU; vitamin K, 1.2 mg; riboflavin, 1.5 mg; pantothenic acid, 6.0 mg; niacin, 9.6 mg; choline, 30 mg; vitamin B₁₂, 6 mcg; selenium, 54 mcg and aureomycin, 25 milligrams.

Results

Average daily gain and feed/gain data by periods and for the entire trial are presented in table 2. There were no significant differences in performance among the three treatments. Average daily gain of pigs fed diets with .4% supplemental potassium was numerically better than gains of pigs in the other treatments during the first growth period. Gain was 1.31 pound/day from this treatment compared to 1.21 and 1.18 pounds/day for pigs fed 0 or .8% supplemental potassium. However, this advantage was not maintained during the finishing period and overall daily gains were similar at 1.48, 1.49 and 1.43 pounds for pigs fed 0, .4 or .8% potassium, respectively. These data indicate that there is no benefit of supplemental potassium from potassium chloride in diets for growing-finishing swine.

TABLE 2. PERFORMANCE OF PIGS FED SUPPLEMENTAL POTASSIUM^a

Item	Supplemental potassium, %		
	0	.4	.8
Avg initial wt, lb	53.4	52.7	52.6
Avg mid-wt, lb	111.1	116.5	109.7
Avg final wt, lb	220.0	218.8	221.0
Avg daily gain, lb			
53-110 lb	1.21	1.31	1.18
110-220 lb	1.69	1.64	1.60
53-220 lb	1.48	1.49	1.43
Feed/gain			
53-110 lb	3.08	3.09	3.17
110-220 lb	3.43	3.40	3.88
53-220 lb	3.33	3.34	3.64

^aSix replicates of four pigs each per treatment.

The average daily gain of pigs by previous dietary lysine levels are shown in table 3. It appeared that pigs fed starter diets low in lysine (.85%) showed some compensatory performance during the finishing period when their daily gains averaged 1.72 pounds and pigs that had been fed starter diets of 1.15% lysine gained 1.59 pounds daily during the finishing period. However, those differences in gain were not significantly different.

TABLE 3. AVERAGE DAILY GAIN RELATED TO LYSINE IN PREVIOUS DIET

Avg daily gain	Lysine in previous diet, %	
	.85	1.15
53-110 lb	1.23	1.24
110-220 lb	1.72	1.59
53-220 lb	1.51	1.44

Summary

Seventy-two pigs having initial weights of approximately 53 pounds and previously fed diets differing in potassium and lysine content were reallocated so that they received the same dietary potassium level as fed previously. Potassium chloride was added to the basal diets to give treatments of 0, .4 and .8% supplemental potassium.

Supplemental potassium at these levels did not affect average daily gain or feed/gain during either the growing, finishing or overall periods.