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R. C. Wahlstrom
South Dakota State University

G. W. Libal

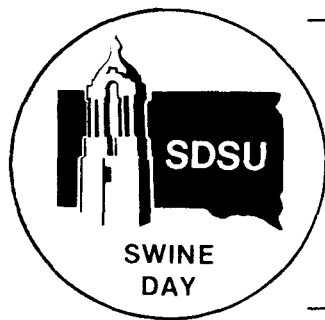
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SIMPLE AND COMPLEX DIETS FOR
EARLY WEANED PIGS
R. C. Wahlstrom, G. W. Libal And
D. L. Hagemeyer
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During recent years many swine producers have adopted the practice of weaning pigs between 21 and 28 days of age. This allows for a shorter interval between farrowings, resulting in more litters per sow per year. Most research has indicated early weaned pigs perform better when fed complex diets containing some milk product, sugar, fat, oats or other ingredients compared to simple corn-soybean meal fortified diets. However, the economics of cost of feed per unit of gain has often favored the simple diets.

The objective of this experiment was to evaluate pig starter diets equalized in lysine content but varying in protein content and source of ingredients when fed to pigs of approximately 28 days of age.

Experimental Procedure

Ninety-six crossbred pigs were weaned at approximately 4 weeks of age and allotted to outcome groups on the basis of weight and litter. These groups were randomly assigned to six treatments, each replicated four times. The pigs were housed, 4 pigs per pen, in the swine laboratory room in the Animal Science Complex. The experiment was conducted for 4 weeks. The dietary treatments were as follows:

1. Corn-soy diet, 16.5% C.P.
2. Corn-soy diet, 20.6% C.P.
3. Corn-soy-whey diet, 14.4% C.P.
4. Corn-oat groats-soy diet, 17.7% C.P.
5. Corn-oat groats-meat meal-fish meal-whey diet, 16.3% C.P.
6. Corn-oat groats-meat meal-fish meal diet, 18.2% C.P.

Diet 2 was a corn-soybean meal diet formulated to contain 1.15% lysine. All other diets contained supplemental L-lysine monohydrochloride to bring the lysine levels to 1.15 percent. In addition to corn and soybean meal, diets 3 and 5 contained whey, and diets 4, 5 and 6 contained meat meal and fish meal. The composition of the diets is shown in table 1 along with the calculated values for protein, calcium, phosphorus and several amino acids.

Results

A summary of the performance data is presented in table 2. Pigs fed diet 1, the 16.5% protein, corn-soybean meal diet supplemented with lysine, gained .96 lb per day, which was greater than gains of pigs in all other treatments that averaged from .78 to .84 lb per day. The average daily gain of pigs fed diet 1 was significantly faster than that of pigs fed diets 4 and 6 and approached significance when compared with diets 2, 3 and 5. The faster gains of pigs fed diet 1 were associated with increased daily feed consumption. There was no difference in feed efficiency among treatments.

TABLE 1. COMPOSITION OF EXPERIMENTAL DIETS AND CALCULATED ANALYSIS OF CERTAIN NUTRIENTS (%)

Ingredients	Diet number					
	1	2	3	4	5	6
Corn	71.7	60.4	68.47	28.3	51.6	33.6
Oat groats	---	---	---	50.0	20.0	50.0
Meat meal	---	---	---	---	5.0	7.0
Fish meal	---	---	---	---	2.5	3.5
Soybean meal	22.7	34.5	16.0	16.2	7.5	3.0
Whey	---	---	10.0	---	10.0	---
Dicalcium phosphate	2.0	1.8	1.9	1.7	.4	---
Limestone	.7	.8	.6	.9	.1	---
Trace mineralized salt	.3	.3	.3	.3	.3	.3
Bentonite	2.0	2.0	2.0	2.0	2.0	2.0
L-lysine HCl	.4	---	.53	.4	.4	.4
Vitamin-antibiotic ^a	.2	.2	.2	.2	.2	.2
<u>Calculated analysis:</u>						
Crude protein	16.5	20.6	14.4	17.7	16.3	18.2
Calcium	.80	.80	.80	.80	.80	.80
Phosphorus	.71	.71	.71	.71	.71	.71
Lysine	1.15	1.15	1.15	1.16	1.15	1.16
Tryptophan	.18	.24	.15	.205	.162	.175
Arginine	1.13	1.44	.91	1.19	1.02	1.16
Threonine	.71	.86	.66	.66	.68	.65
Isoleucine	.85	1.07	.75	.76	.72	.67
Meth-Cystine	.62	.73	.55	.55	.57	.57
Leucine	1.62	1.89	1.46	1.40	1.45	1.38

^aSupplied per pound of diet: vitamin A, 2000 IU; vitamin D, 200 IU; vitamin E, 4 IU; vitamin K, 1.6 mg; riboflavin, 2 mg; pantothenic acid, 8 mg; niacin, 12.8 mg; choline, 80 mg; vitamin B₁₂, 8 mcg; selenium, .07 mg; penicillin, 25 mg; chlortetracycline, 50 mg and sulfamethazine, 50 milligrams.

TABLE 2. COMPLEX AND SIMPLE DIETS FOR YOUNG PIGS

	Diet number					
	1	2	3	4	5	6
Avg initial wt, lb ^a	17.9	17.8	17.8	17.8	17.9	17.8
Avg final wt, lb	44.5	40.3	40.7	39.8	41.3	39.6
Avg daily gain, lb ^b	.96	.80	.81	.79	.84	.78
Avg daily feed, lb	1.59	1.34	1.46	1.29	1.39	1.38
Feed/gain	1.68	1.67	1.80	1.60	1.67	1.77

^aFour lots of four pigs each per treatment.
^bDiet 1 different from diets 4 and 6 (P<.05).

In this trial there was no difference in the performance of pigs fed 14.4 or 20.6% protein diets that were equal in lysine content and contained levels of other essential amino acids above recommended requirements. Diet 3 was a 14.4% protein corn-soybean meal-whey diet supplemented with lysine and diet 2, was a 20.6% protein, corn-soybean meal diet with an equal lysine content. More complex diets, diets 4, 5 and 6, that contained oat groats, meat meal, fish meal and whey to replace part of the corn and soybean meal did not improve performance of pigs compared to those fed the simple corn-soybean meal diets containing the same level of lysine. Arginine to lysine ratios varied from 0.8:1 in diet 2 to 1.26:1 in diet 3 and did not appear to affect performance. It has also been suggested that isoleucine to leucine ratio is important in swine diets. However, the ratios of these amino acids in the diets used in this experiment were not greatly different. Ratios were 1:1.91; 1:1.77; 1:1.95; 1:1.84; 1:2.01 and 1:2.06 for diets 1 to 6, respectively.

Summary

Ninety-six, 4-week-old weaned pigs were fed either simple corn-soybean meal fortified diets or more complex diets containing oat groats, whey, fish meal and meat meal in addition to corn and soybean meal. All diets were equalized in lysine content at a level of 1.15 percent.

There were no advantages in pig performance of feeding the complex diets. Pigs gained fastest when fed the 16.5% protein corn-soybean meal fortified diet supplemented with lysine. This gain was significantly greater than that of pigs fed diets 4 and 6 and the difference in gains between pigs fed diet 1 and diets 2, 3 and 5 approached significance.