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Several experiments conducted during the past few years have shown opaque-2 corn to be of higher protein quality than regular or normal corn. The improved quality can be attributed to the higher content of lysine and perhaps tryptophan. Two previous experiments have been conducted at this experiment station which have shown that growing pigs consume less protein supplement on a free-choice basis when opaque-2 corn is the grain rather than normal corn. The experiment reported herein was conducted to obtain further information on feed consumption and performance of growing-finishing pigs fed opaque-2 or normal corn free-choice with two different protein supplements.

Experimental Procedure

Sixty crossbred, female pigs averaging about 41 lb. were allotted into 12 lots on the basis of weight and litter. The pigs were housed in inside, concrete floored pens which were bedded with straw. The pigs had access to outside concrete lots where self-feeders were located during the 1971-72 winter from mid-November to late February.

The composition of the protein-mineral-vitamin-antibiotic supplement is shown in table 1. Supplement A was a combination plant and animal protein supplement while supplement B was composed of soybean meal only as the protein source. Supplement A contained 39.4% protein and 2.62% lysine and supplement B contained 38.1% protein and 2.77% lysine. Both supplements contained approximately 3.35% calcium and 1.9% phosphorus. The opaque-2 corn analyzed 9.0% protein and 0.39% lysine compared to 9.0% protein and 0.26% lysine for the normal corn.

Three lots of pigs were randomly assigned to each of the four treatments as follows:

1. Normal corn and supplement A
2. Opaque-2 corn and supplement A
3. Normal corn and supplement B
4. Opaque-2 corn and supplement B

Results

A summary of the growth and feed data is presented in table 2. There were no significant differences in rate of gain due to treatment although pigs fed normal corn and supplement A gained 0.15 lb. less daily than the other three groups. When supplement A was fed, gains were 1.62 and 1.47 lb. per day for pigs on opaque-2 and normal corn, respectively. However, with supplement B as the protein source, gains were 1.63 and 1.62 for pigs fed opaque-2 and normal corn, respectively.

Significantly less protein supplement was consumed by pigs fed opaque-2 corn. This difference in supplement consumption was noted during both the growing and finishing phases. For the entire feeding period pigs fed opaque-2 corn selected 0.33 lb. less supplement per day than pigs receiving normal corn. There were no differences in consumption of supplements A and B. Overall feed consumption was similar between pigs fed the two different types of corn, as pigs fed opaque-2 corn consumed about 0.3 lb. more corn per day than pigs fed normal corn.

Significantly less feed per gain was required by pigs fed opaque-2 corn during the growing period (2.65 vs. 2.82 lb.) and for the entire trial where pigs fed opaque-2 corn required 2.92 lb. of feed per unit of gain and pigs fed normal corn required 3.05 lb. During the finishing period both groups required 3.31 lb. of feed per lb. of gain. As in previous experiments, feed efficiency was very good for pigs fed free-choice.

Summary

Pigs weighing approximately 41 lb. initially were fed free-choice opaque-2 or normal corn and soybean meal or soybean meal-meat meal-alfalfa meal supplements. Although daily gains were not significantly different, pigs fed the normal corn and the mixed supplement gained about 10% slower than pigs in the other treatments.

Pigs fed opaque-2 or normal corn consumed about the same amount of total feed daily. However, when opaque-2 corn was fed, pigs consumed about 0.33 lb. less supplement and 0.3 lb. more corn than did pigs having access to normal corn and supplement. Therefore, a savings in feed cost was obtained when pigs were fed opaque-2 corn. Pigs fed opaque-2 corn required less feed per gain during the growing period and for the entire experiment.

Table 1. Percentage Composition of Supplements

Ingredients	Supplement A	Supplement B
Soybean meal (44%)	63.1	86.1
Meat meal (50%)	20.0	--
Dehydrated alfalfa meal (17%)	10.0	--
Dicalcium phosphate	3.5	7.5
Ground limestone	0.5	3.5
Trace mineralized salt[a]	2.5	2.5
Vitamin-antibiotic mix[b]	0.4	0.4

[a]Provided in addition to sodium chloride the following elemental levels to the supplement: 200 ppm zinc, 5.5 ppm cobalt, 100 ppm manganese, 12 ppm copper, 82.5 ppm iron, 2.75 ppm iodine.

[b]Contributed per lb. of supplement: 6,800 I.U. vitamin A, 2,000 I.U. vitamin D_2, 20 mcg. vitamin B_{12}, 8 mg. riboflavin, 16 mg. calcium pantothenate, 36 mg. niacin, 40 mg. choline chloride, and 50 mg. chlortetracycline.

Table 2. Results of Feeding Opaque-2 Corn Free-Choice to Growing-Finishing Swine

Corn	Normal	Opaque-2	Normal	Opaque-2
Supplement	A	A	B	B
Number of pigs[a]	15	15	14	14
Avg. initial wt., lb.	40.7	40.8	41.2	40.8
Avg. final wt., lb.	191.6	199.3	199.1	195.4
Avg. daily gain, lb.	1.47	1.62	1.62	1.63
Avg. feed/day, lb.				
Corn	3.61	4.19	3.97	4.00
Supplement**	0.90	0.59	0.94	0.60
Total	4.51	4.78	4.91	4.59
Feed/gain, lb.*	3.07	2.96	3.03	2.89

[a]Three lots of five pigs each.

*Significant difference due to corn ($P<.05$).

**Significant difference due to corn ($P<.01$).