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Previous research has shown that a variety (Dal) of high protein oats which contained over 16% protein and 0.66% lysine could be used to replace up to 60% of the grain in growing-finishing pig diets. In addition, it was possible to reduce the amount of supplemental protein in the diet because of the higher lysine content of this oats. Recently the South Dakota Station has developed a new oats variety (Spear) that is also high in protein and lysine, being similar to Dal oats in content of these nutrients.

The objective of this experiment was to determine the level of Spear oats that could be used in young, weaned pig starter diets when diets contained equal amounts of lysine.

Experimental Procedure

One hundred twenty-six crossbred pigs averaging approximately 18 lb. were allotted on the basis of weight and ancestry to three replicates of seven treatments. Each lot contained six pigs. The pigs were housed in an enclosed building having solid concrete floors that were bedded with shavings. Feed and water were provided ad libitum during the 4-week experiment.

The composition of the diets is shown in table 1. The Spear oats contained 15.6% protein and 0.65% lysine. All diets were formulated to contain 0.92% lysine. The experimental treatments were as follows:

1. Corn-soy diet (no oats)
2. 10% oats
3. 20% oats
4. 30% oats
5. 40% oats
6. 50% oats
7. 60% oats

Results

A summary of the results of this trial are shown in table 2. There were significant differences in rate of gain, feed/gain and daily feed consumption among treatments. Levels of 10 and 20% high protein oats resulted in faster and more efficient gains than those obtained when pigs were fed the control, corn-soybean meal diet. Both rate of gain and feed efficiency decreased progressively with increasing levels of oats above 20%. However, performance of pigs fed the 30% oat diet was similar to performance of pigs fed the corn-soybean meal diet. The oats in the 30% oat diet constituted approximately 40% of the grain portion of that diet. This diet also contained 4.2% less soybean meal than the control diet, but they were of equal lysine content.

Diets containing 40, 50 and 60% oats were quite bulky and some difficulty was experienced with these diets bridging in the feeders. Although feeders were checked several times a day to insure that feed was in the feed compartments, it is possible that some degree of feed restriction may have been imposed on these pigs.

Most pigs did not gain weight during the first week of the experiment. We have found that weaning pigs at a weight of approximately 18 lb., as in this experiment, results in about a 2-week adjustment period before they are eating and gaining well. However, the amount of oats in the diet did not appear to affect feed consumption during this adjustment period except for the levels of 50 and 60% oats. These two diets were not consumed as readily, possibly because of their high fiber level.

Summary

A trial was conducted using 126 crossbred pigs averaging 18 lb. to evaluate various levels of high protein (Spear) oats in starter diets for weanling pigs.

The results of this trial indicate that high protein oats can constitute at least 30% of the diet without significantly affecting performance of young pigs. Pigs fed diets of 10 or 20% oats gained faster and more efficiently than those fed corn as the only grain, while pigs fed diets of 50 or 60% oats gained less and required more feed/gain. Diets containing 40% oats or more did not feed down in the self-feeders as well as diets containing a lower level of oats. Approximately 5.5% less supplemental protein was needed with each 10% level of high protein oats in the diets or 10 lb. of oats replaced approximately 8.6 lb. of corn and 1.4 lb. of soybean meal.

Table 1. Composition of Diets (Percent)

	Percent of high protein oats						
Ingredients	0	10	20	30	40	50	60
Corn	73.1	64.4	55.8	47.4	38.8	30.2	21.7
Spear oats	--	10.0	20.0	30.0	40.0	50.0	60.0
Soybean meal, 48%	24.2	22.9	21.5	20.0	18.6	17.2	15.7
Dical	1.4	1.4	1.4	1.3	1.3	1.3	1.3
Limestone	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Trace mineral salt	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Premix[a]	0.1	0.1	0.1	0.1	0.1	0.1	0.1

[a]Supplied per lb. of diet: vitamin A, 2000 IU; vitamin D, 200 IU; vitamin E, 3 IU; vitamin K, 1.2 mg; riboflavin, 1.5 mg; pantothenic acid, 6 mg; niacin, 9.6 mg; choline, 30 mg; vitamin B_{12}, 6 mcg; aureomycin, 50 mg; penicillin, 25 mg and sulfamethazine, 50 milligrams.

Table 2. Effect of Various Levels of High Protein Oats on Performance of Young Weaned Pigs

	Level of high protein oats						
	0	10	20	30	40	50	60
Number of pigs[a]	18	18	18	18	18	18	18
Avg. initial wt., lb.	18.2	18.0	18.0	18.0	18.1	18.1	18.3
Avg. final wt., lb.[b]	33.2	36.0	36.2	33.1	32.1	30.3	28.7
Avg. daily gain, lb.[c]	0.54	0.64	0.65	0.54	0.50	0.44	0.38
Daily feed consumed, lb.[c]	1.28	1.38	1.39	1.26	1.15	1.28	0.96
Feed/gain[b]	2.37	2.19	2.26	2.36	2.40	2.95	2.72

[a]Three lots of 6 pigs each per treatment.
[b]Significant difference ($P<.05$) among treatments.
[c]Significant difference ($P<.01$) among treatments.