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Use of oats and fat in swine grower rations

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Summary

Two feeding trials involving 112 Yorkshire weaned pigs (25 lbs.) were conducted to study the use of oats and fat in grower rations. Adding 3% fat (soy oil) to the fortified corn-soybean control ration reduced daily feed intake, but improved feed efficiency. Incorporating 40% oats in a fortified corn-soybean meal grower ration resulted in similar pig performance for rate of gain, daily feed intake, and feed efficiency even though the ration contained 6.5% fiber. Pigs fed a diet containing 40% oats and 5% fat gained 5% faster and were 10% more efficient than pigs fed the control ration.

Introduction

Oats, because of their high fiber content, have been considered to be of limited value in swine starter and grower rations. But studies conducted recently suggest that slightly increasing the fiber content of the diet may be more beneficial than detrimental to the weaned pig. These experiments were conducted to evaluate the use of oats and fat in grower rations for the weaned pig.

Procedure

Two feeding trials were conducted on 25 lb. weaning pigs. In trial 1, 56 Yorkshire pigs were

randomly assigned (by sex and weight) to the following replicated treatment groups: (A) corn-soy fortified basal diet, (B) 40% oat diet (6.6% fiber), (C) 3.5% solka-floc (cellulose) (6.5% fiber), (D) 3% added fat (soy oil). Composition of rations is presented in table 7. Growing pigs were housed in an environmentally-controlled nursery. Each pen (5' x 11') had totally slatted floors and contained a two-hole feeder with an automatic watering cup.

In trial 2, 56 Yorkshire pigs were randomly allotted to the following replicated treatments: (A) corn-soy fortified basal diet, (B) 40% oat diet, (C) 20% oat diet, or (D) 40% oat diet with 5% fat. Pigs were handled as in trial 1, except that the trial lasted 35 days instead of 28 days.

Results and Discussion

Results of growing trial 1 are summarized in table 8. Adding 3% soybean oil to the control diet tended to depress the pigs' feed consumption; however, their rate of gain was similar to that of control pigs and feed efficiency was improved. Pigs receiving the 40% oat diet consumed about the same amount of feed per day as did pigs fed the control diet. We had postulated that because of the increased fiber content of the 40% oat diet, the pigs fed that diet would consume more feed and be less efficient. Such was not the case. Pigs fed the fiber-source solka-floc performed similarly to pigs fed 40% oats or control diet.

Adding oats or solka-floc increased the fiber content of the diet two-fold (6.5% vs. 3.0%) without detrimentally affecting the performance of 25 lb. weaned pigs.

Table 9 summarizes the performance of pigs fed in trial 2. Pigs fed the 40% oat diet again performed similarly to the pigs fed the control diet. Reducing the oat content of the diet to 20% resulted in slightly improved gain, in that the pigs tended to consume more feed per day. The use of 5% fat in the 40% oat diet increased rate of gain and improved feed efficiency as compared with performance of pigs receiving the control diet.

Table 7 . Composition of experimental rations.

Ingredients, %	Control	20% oats	40% oats	3% fat	3.5% solka- floc	40% oats + 5% fat
Gd. yellow corn	68.9	49.0	31.4	64.4	63.9	22.5
Soybean meal (44%)	27.0	27.0	24.5	28.5	28.5	28.5
Oats	--	20.0	40.0	--	--	40.0
Edible fat	--	--	--	3.0	--	5.0
Solka-floc	--	--	--	--	3.5	--
Dicalcium phosphate	1.5	1.5	1.5	1.5	1.5	1.5
Limestone	1.1	1.1	1.1	1.1	1.1	1.1
Salt	.5	.5	.5	.5	.5	.5
Vit.-tm premix ^{ab}	1.0	1.0	1.0	1.0	1.0	1.0
Mecadox	.5	.5	.5	.5	.5	.5
Calc. analysis, %						
Crude protein, %	17.8	18.4	18.9	17.9	17.9	19.0
Lysine, %	.91	.94	.98	.95	.94	1.01
Fiber, %	3.0	4.8	6.6	3.0	6.5	6.6
Calcium, %	.82	.83	.85	.80	.80	.85
Phosphorus, %	.66	.67	.68	.65	.65	.67

^aProvided per ton of complete diet: vitamin A, 4,000,000 IU; vitamin D₃, 300,000 IU; vitamin E, 20,000 IU; riboflavin, 45 g; niacin, 25 g; pantothenic acid, 12 g; vitamin B₁₂, 22 milligrams.

^bProvided in complete diet (ppm) zinc, 100; iron, 100; manganese, 100; copper, 10; iodine, 1.0.

Table 8 . Performance of pigs in trial 1 (28 days).

Ration:	Control	40% oats	3.5% solka- floc	3% fat
No. pigs	14	14	14	14
Avg. initial wt., lbs.	26.3	25.6	27.2	27.2
Avg. final wt., lbs.	56.8	57.8	57.3	57.2
Avg. daily gain, lbs.	1.10	1.14	1.08	1.07
Avg. daily feed intake, lbs.	2.21	2.16	2.16	1.99
Feed/gain	2.01	1.90	2.00	1.86

Table 9 . Performance of pigs in trial 2 (35 days).

Ration:	Control	20% oats	40% oats	40% oats + 5% fat
No. pigs	14	14	14	14
Avg. initial wt., lbs.	27.2	27.7	27.4	27.4
Avg. final wt., lbs.	74.2	76.2	74.9	77.2
Avg. daily gain, lbs.	1.35	1.39	1.36	1.43
Avg. daily feed lbs.	2.76	2.86	2.72	2.60
Feed/gain	2.05	2.07	2.00	1.83