FATS AND PROTEINS RESEARCH FOUNDATION, INC.

Director's Digest

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AREA CODE 813 — 463-4744

January 1990 No. 183

FEATHER MEAL - A NEW SOURCE OF PROTEIN FOR SWINE

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Experiments conducted at the Tennessee Agricultural Experiment Station show that feather meal can be used successfully to supply part of the protein needed for growing-finishing swine. Two experiments with feather meal have been completed and others are now in progress. Since feathers contain approximately 87 percent crude protein, they represent a large potential source of protein for feed use.

The first experiment, conducted during the spring and summer of 1956, was with 40 Hampshire and Duroc barrows. Twenty pigs with an average initial weight of about 53 pounds were divided into four comparable groups and fed the experimental rations in concrete pens. Four other groups of five pigs per group, weighing about 58 pounds per pig, were fed the experimental rations on orchardgrass-Ladino clover pastures. A second experiment was initiated in the fall of 1956 in which 48 Hampshire and Duroc pigs averaging 43 pounds each were divided into four comparable groups and fed rations containing feather meal on winter oats pasture. Crimson clover was seeded with the oats but failed to germinate.

The pigs were weighed at 14-day intervals until they reached 180 pounds. They were then weighed at weekly intervals and removed from the experiment as they reached or exceeded 200 pounds in weight.

The Rations Fed

The basal or control ration used in these experiments consisted of ground yellow corn, soybean oil meal, meat and bone meal, dehydrated alfalfa meal (omitted

from pasture rations), minerals, salt and an antibiotic. The rations fed to pigs in dry lot contained 16 percent protein while rations fed to pigs on pasture contained 14 percent protein. The protein content of the rations was lowered 2 percent when the pigs in a group averaged 75 pounds and again when they averaged 150 pounds. All rations were completely mixed and self-fed.

Two kinds of feather meal were obtained from a local rendering plant and used in these experients. One batch of feather meal was prepared by steam cooking feathers under slight pressure for about 3 1/2 hours. About 100 pounds of blood was added per 1,000 pounds of feathers. The second batch of feather meal was prepared by adding about 75 pounds of lime per ton of feathers. The feathers were then cooked for approximately 2 hours at 248 degrees F. before being dried and ground.

The steam hydrolyzed feather meal analyzed 80.3 percent protein, compared with 73.0 percent for the lime hydrolyzed meal. The steam hydrolyzed feather meal was used to replace one-third and two-thirds of the soybean meal in the control ration, while the lime hydrolyzed meal was used only at one level-replacing one-third of the soybean oil meal.

Results

The results of feeding feather meal to growing-finishing swine in the first experiment are shown in Table 1. There was little difference in the average daily gains of the pigs in dry lot fed various experimental rations. Thus the pigs on the controdl ration gained at a rate of 1.62 pounds per head daily as compared with 1.61 pounds and 1.57 pounds for the pigs receiving lime hydrolyzed feather meal. Feed consumption was slightly less for the pigs fed feather meal in dry lot. Since these pigs gained at the same rate as the control pigs, the amount of feed required per pound of gain was slightly smaller-particularly for the pigs on the low level of feather meal. However, due to the small number of pigs on each ration, it is impossible to conclude from these preliminary data that this was a true ration effect.

Pigs fed feather meal on pasture (Table 1) also gained equally as fast as the pigs fed the control ration. Actually the pigs fed the low level of steam hydrolyzed feather meal seemed to gain faster (1.41 pounds vs. 1.53 pounds per

day), but the difference in rate of gain was not statistically significant. Feed consumption per head daily, and feed required per pound of gain for the various groups were not significantly different.

Results of the second experiment (Table 2) confirm the results of the first experiment, since average daily gains by all four groups of pigs were almost identical. Feed consumption per head daily and feed required per pound of gain for the various groups were not significantly different.

Table 1. — Results of Feeding Feather Meal to Growing-Finishing Swine in Drylot and on Pasture (Exp. 1).

Location and	Dry Lot				Pasture			
treatment, 5 pigs per lot	Basal ration	X level FMa	2X level FMa	X level FMb	Basal ration	X level FMa	2X level FMa	X level FMb
Av. initial wt.	53.8	53.4	54.4	53.6	59.6	57.8	56.8	59.6
Av. daily gains	1.62	1.61	1.57	1.66	1.41	1.53	1.44	1.48
Av. daily feed	6.1	5.7	5.8	5.6	4.9	5.1	5.0	5.0
Feed required per lb. of gain	3.73	3.53	3.69	3.40	3.48	3.35	3.46	3.35

FMa — Steam hydrolyzed feather meal.

FMb — Lime hydrolyzed feather meal.

X level — One-third of soybean oil meal protein replaced with feather meal protein.

Table 2. — Results of Feeding Feather Meal to Growing-Finishing Swine on Pasture (Exp. II).

Weights, gains, feed requirements, and backfat thickness	Group number and ration [a]			
	I Basal ration	II X level FMa	III 2X level FMa	IV X level FMb
Av. initial wt., lb.	43.0	43.0	42.8	42.7
Av. final wt., lb.	202	201	200	205
Av. daily gain	1.45	1.45	1.44	1.46
Av. daily feed	5.32	5.44	5.50	5.33
Feed required per lb. gain	3.67	3.75	3.82	3.65
Backfat thickness, inches	1.52	1.47	1.53	1.51

[a] — Groups contained 12 pigs per lot, except lot IV which contained 11 pigs.

FMa — Steam hydrolyzed feather meal.

FMb — Lime hydrolyzed feather meal.

X level — One-third of soybean meal replaced with feather meal protein.

Reprinted from TENNESSEE FARM AND HOME SCIENCE,

Progress Report No. 23, September, 1957