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Dried blood meal is one of the highest protein by-products of the packing industry. The conventional methods of drying blood in the past have been with the drum drying process which subjects the blood to a high temperature for a considerable length of time. Research reported at the 1974 Swine Day (A.S. Series 74-28) indicated that performance of growing-finishing pigs was reduced when 4% blood meal replaced an equivalent amount of soybean meal in the diet. This reduction in performance was eliminated by supplementing the blood meal diet with lysine, indicating that the heating process apparently destroyed much of the lysine or rendered it unavailable to the pig.

The experiment reported herein was conducted to obtain information on the value of ring dried blood meal, a process that subjects the meal to less severe heat during the drying process.

Experimental Procedure

Seventy-two pigs averaging approximately 54 lb. initially were allotted to two replications of six treatments on the basis of ancestry, weight and sex. Each lot contained three barrows and three gilts. The pigs were housed in a totally enclosed confinement type building. Pens had partial or fully slatted floors and were equipped with three-hole self-feeders and automatic waterers.

The six dietary treatments were as follows:

1. Corn-soybean meal diet
2. Two percent blood meal replacing 2% soybean meal
3. Four percent blood meal replacing 4% soybean meal
4. Two percent blood meal replacing an equivalent amount of protein from soybean meal
5. Four percent blood meal replacing an equivalent amount of protein from soybean meal
6. Diet 5 plus 0.1% L-lysine

The composition of the 14% protein grower and 12% finisher diets for the six treatments is shown in tables 1 and 2, respectively. Diets were changed to the lower protein level when the pigs averaged about 110 pounds. Because of a need to use the pens for other purposes, the experiment was terminated at an average weight of approximately 162 pounds.

Results

Growth performance data are summarized in table 3. Average daily gains were very similar for all treatments in replicate 1. However, in replicate 2 pig gains were more variable and gains were somewhat less for treatments 4 and 5 that received diets containing 2 and 4% of blood meal replacing an equivalent amount of protein. This difference appeared to be due to two pigs in treatment 4 and one pig in treatment 5 that gained considerably slower than other pigs in their respective groups and may not have been due to the blood meal in the diet. Gains of replicate 2 may also have been less than replicate 1 because of less time on the experiment so that they were of lighter weight. When data for average daily gain for the two replicates were averaged together, there was no significant difference among treatments. It would appear that the lysine in this blood meal was quite highly available, since diet 5 had only 0.45 and 0.30% lysine furnished by the corn and soybean meal in the grower and finisher diets, respectively. This is considerably below the requirements of about 0.65 and 0.55% lysine for pigs of the weights in this experiment.

Somewhat less feed was consumed by pigs receiving the diets containing blood meal. They also required less feed/gain than did the pigs fed the corn-soybean diet. This may be a reflection of feed intake as it has been shown that moderately limiting dietary intake increases feed efficiency.

Summary

Diets containing up to 4% ring dried blood meal replacing an equivalent amount of soybean meal were fed to growing pigs from approximately 54 to 162 lb. live weight. There were no significant differences in average daily gains. Feed consumption and feed/gain were reduced when pigs were fed the diets containing dried blood meal. There was no advantage of adding lysine to the dried blood meal diets and it appeared that the lysine in this blood meal was quite available to the pig.

Table 1. Composition of Diets Fed to 110 Pounds (Percent)

Ingredients	Treatments					
	1	2	3	4	5	6
Ground yellow corn	82.7	82.7	82.7	84.1	85.3	85.2
Soybean meal, 44%	14.6	12.6	10.6	11.2	8.0	8.0
Blood meal	--	2.0	4.0	2.0	4.0	4.0
Dicalcium phosphate	1.5	1.5	1.5	1.5	1.5	1.5
Ground limestone	0.5	0.5	0.5	0.5	0.5	0.5
Trace mineral salt[a]	0.5	0.5	0.5	0.5	0.5	0.5
L-lysine	--	--	--	--	--	0.1
Vitamin-antibiotic mix[b]	0.2	0.2	0.2	0.2	0.2	0.2

[a]Contained 0.8% zinc.

[b]Supplied per lb. of diet: vitamin A, 1500 IU; vitamin D, 150 IU; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 10 mg; choline, 50 mg; vitamin B_{12}, 7.5 mcg and aureomycin, 10 milligrams.

Table 2. Composition of Diets Fed From 110 Pounds (Percent)

Ingredients	Treatments					
	1	2	3	4	5	6
Ground yellow corn	88.4	88.4	88.4	89.8	91.1	91.0
Soybean meal, 44%	9.0	7.0	5.0	5.6	2.3	2.3
Blood meal	--	2.0	4.0	2.0	4.0	4.0
Dicalcium phosphate	1.4	1.4	1.4	1.4	1.4	1.4
Ground limestone	0.5	0.5	0.5	0.5	0.5	0.5
Trace mineral salt[a]	0.5	0.5	0.5	0.5	0.5	0.5
L-lysine	--	--	--	--	--	0.1
Vitamin-antibiotic mix[b]	0.2	0.2	0.2	0.2	0.2	0.2

[a]Contained 0.8% zinc.
[b]See table 1.

Table 3. Growth Performance of Pigs Fed Ring Dried Blood Meal

	Treatments					
	1	2	3	4	5	6
Number of pigs[a]	10	12	12	11	12	11
Avg. daily gain, lb.						
Rep 1	1.49	1.50	1.46	1.51	1.53	1.50
Rep 2	1.37	1.40	1.37	1.20	1.29	1.41
Avg.	1.44	1.45	1.42	1.36	1.41	1.45
Avg. feed consumed/day, lb.						
Rep 1	5.39	5.15	4.85	4.77	4.85	4.66
Rep 2	5.42	5.19	5.00	4.69	4.68	4.71
Avg.	5.40	5.17	4.93	4.73	4.78	4.68
Feed/gain						
Rep 1	3.62	3.43	3.31	3.17	3.17	3.10
Rep 2	3.95	3.69	3.64	3.90	3.64	3.60
Avg.	3.75	3.56	3.48	3.54	3.41	3.35

[a]Two replicates of 6 pigs each per treatment. Two pigs died and 2 were removed, data are not included. Average initial weight 54 lb., final weight 162 pounds.