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Dried blood meal is an important by-product of the packing industry that contains over 80% protein. However, the conventional drying methods used in the past have used a high temperature batch drying process that has resulted in poor availability of certain amino acids, particularly lysine, and a product lacking palatability for swine. Recent research at South Dakota using blood meal dried by a continuous drying method in a rotary steam dryer has indicated a higher value for such blood meal.

This experiment was conducted to obtain additional data on the value of rotary steam dried blood meal and meat meal as alternative protein sources to replace soybean meal in diets for growing-finishing swine.

Experimental Procedure

Eighty-four crossbred pigs averaging 53 lb. were randomly allotted to four treatments in three replicates on the basis of sex, ancestry and weight. Each pen consisted of four barrows and three gilts. The pigs were housed in a totally enclosed confinement building in pens 5 feet by 15 feet. Feed and water were available ad libitum.

Diets were formulated to contain equal levels of lysine and are shown in tables 1 and 2. The lysine levels were 0.71 and 0.57% in the grower and finisher diets, respectively. The supplemental protein was furnished by soybean meal, blood meal and meat meal in various combinations as shown in tables 1 and 2.

Results

Table 3 summarizes the results of average daily gain, feed consumption and feed/gain of pigs fed the four experimental diets. Blood meal and meat meal were satisfactory replacements of soybean meal as a source of lysine and other essential amino acids as there were no significant differences in performance of pigs among treatments. There did appear to be an adverse effect on palatability when blood meal or meat meal was included in the diet during the growing period. Pigs fed the soybean meal diet consumed significantly more feed than those fed the diets containing soybean meal and blood or meat meal during this period. Slightly less daily feed was consumed by pigs fed diets containing blood meal during the 125 to 215 lb. period.

Summary

Eighty-four crossbred pigs weighing approximately 53 lb. were used to evaluate blood meal and meat meal as protein substitutes for soybean meal in diets for growing-finishing pigs.

The results of this experiment indicate that blood meal and meat meal are satisfactory replacements of soybean meal. The data reported here indicate that blood meal can constitute approximately 60% of the supplemental protein in diets where the remainder of the supplemental protein is supplied by soybean meal or meat meal.

Table 1. Composition of Diets Fed to 125 Pounds (Percent)

	Soybean meal	Blood meal-meat meal	Soybean meal-blood meal	Soybean meal-meat meal
Corn	79.9	87.5	84.6	82.9
Soybean meal, 44%	17.5	--	7.0	10.4
Blood meal	--	5.7	5.7	--
Meat meal	--	5.7	--	5.7
Dicalcium phosphate	1.2	0.4	1.4	0.2
Ground limestone	0.8	0.1	0.7	0.2
Trace mineral salt[a]	0.5	0.5	0.5	0.5
Premix[b]	0.1	0.1	0.1	0.1

[a]Contained 1% zinc.
[b]Supplied per lb. of diet: vitamin A, 1500 IU; vitamin D, 150 IU; vitamin E, 2.5 IU; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 8 mg; choline, 25 mg; vitamin B_{12}, 5 mcg and tylan, 10 milligrams.

Table 2. Composition of Diets Fed From 125 to 215 Pounds (Percent)

	Soybean meal	Blood meal-meat meal	Soybean meal-blood meal	Soybean meal-meat meal
Corn	85.1	90.4	88.3	87.2
Soybean meal, 44%	12.3	--	5.0	7.3
Blood meal	--	4.0	4.0	--
Meat meal	--	4.0	--	4.0
Dicalcium phosphate	1.3	0.7	1.4	0.5
Ground limestone	0.7	0.3	0.7	0.4
Trace mineral salt[a]	0.5	0.5	0.5	0.5
Premix[b]	0.1	0.1	0.1	0.1

[a]Contained 1% zinc.
[b]Supplied per lb. of diet: vitamin A, 1500 IU; vitamin D, 150 IU; vitamin E, 2.5 IU; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 8 mg; choline, 25 mg; vitamin B_{12}, 5 mcg and tylan, 10 milligrams.

Table 3. Performance of Pigs Fed Diets Containing Blood Meal and Meat Meal

	Soybean meal	Blood meal-meat meal	Soybean meal-blood meal	Soybean meal-meat meal
Number of pigs[a]	21	21	21	21
Avg. initial wt., lb.	53.8	53.3	52.9	54.3
Avg. final wt., lb.	214.4	215.7	214.8	214.9
Avg. daily gain, lb.				
53 to 125 lb.[b]	1.54	1.44	1.52	1.52
125 to 215 lb.	1.74	1.71	1.71	1.83
53 to 215 lb.[b]	1.64	1.58	1.61	1.67
Avg. feed consumed/day, lb.				
53 to 125 lb.[c]	4.32	4.03	3.87	3.97
125 to 215 lb.	6.95	6.46	6.37	6.90
53 to 215 lb.	5.63	5.29	5.14	5.40
Feed/gain				
53 to 125 lb.	2.77	2.79	2.53	2.65
125 to 215 lb.	3.96	3.76	3.70	3.75
53 to 215 lb.	3.40	3.33	3.16	3.22

[a]Three replicates of 7 pigs each per treatment.
[b]Significant difference due to sex ($P<.05$).
[c]Significant difference due to treatment ($P<.05$).