

*Director's  
Digest*



FRED D. BISPLINGHOFF, D.V.M.  
Director Technical Services

7150 ESTERO BLVD • APT. 906  
FT. MYERS BEACH, FL 33931  
AREA CODE 813 — 463-4744  
FAX 813 — 463-1315

July, 1993 No. 257

A STUDY OF THE REPLACEMENT VALUE OF MEAT MEAL IN CORN-SOYBEAN  
MEAL RATIONS FOR GROWING PIGS

A. J. Clawson and E. R. Barrick  
North Carolina Agricultural Experimental Station, Raleigh, NC

INTRODUCTION Meat and bone meal at about 6 percent has been shown to give good results in rations for growing-fattening pigs. At this level, it supplied 20 percent of the total dietary protein.

Feeding tests were conducted with pigs, in which meat and bone meal was used to supply 7.5, 15.0, and 20.0 percent of the total dietary protein in corn-soybean meal type rations. the performance of the pigs was good on all diets with no significant differences in growth rate, daily feed intake, or in feed required per pound of gain. At 6 percent in the ration, meat and bone meal also supplied adequate calcium and phosphorous to meet dietary needs.

The purpose of this study was to evaluate the replacement value of meat meal in fortified corn-soybean meal rations.

EXPERIMENTAL PROCEDURE A total of 36 pigs were individually fed the six rations shown in Table 1. Meat meal was added to supply 7.5, 15 and 20% of the total dietary protein or approximately 15, 30 and 40% of



the supplemental protein. Soybean meal (50% protein) supplied the remaining supplementary protein in isonitrogenous rations. When meat and bone meal was used to supply 20% of the supplemental protein, it also supplied sufficient supplemental phosphorus and when it was used to supply 40% of the supplemental protein, the requirements for both calcium were met. Methionine and lysine, amino acids that may be limiting in swine rations and that are available for commercial supplementation, were incorporated as additional treatments. They were added singly to the diet containing 40% of the supplemental protein from meat and bone meal (diets 5 and 6, Table 1).

The pigs were housed in a completely enclosed house. They were self-fed and water was provided automatically. Individual weights and feed records were recorded bi-weekly and the pens were cleaned daily. The trial was conducted during the summer of 1965.

RESULTS Previous work at N.C. State University has shown that a ration in which one-half (1/2) the protein is supplied by corn and one-half (1/2) by soybean meal provided excellent quality of protein for rapid growth of pigs. Growth rate of pigs was not significantly improved by supplying a higher percentage of the protein from soybean meal. For this reason, meat and bone meal was substituted for soybean meal as indicated previously.

Performance of the pigs is shown in Table 2. The performance was good on all diets with no significant differences in growth rate, daily feed intake or in feed required per pound of gain. Meat and bone meal was a satisfactory source of supplemental protein when used to supply up to 20 percent of the protein or up to about 6 percent of the total

ration. At this level it also supplied adequate calcium and phosphorus to meet the dietary needs.

**SUMMARY** This work clearly demonstrates that meat and bone meal can be used to supply up to 20 percent of the protein in rations for growing pigs. This is equivalent to about 6 percent meat and bone meal in the total ration. At this level, meat and bone meal was completely satisfactory as a source of protein to supplement that provided by corn and soybean meal and it also supplied adequate calcium and phosphorus to meet dietary needs, obviating the necessity for adding any other source of minerals except for those in the trace mineral salt mixture.

Since there were no significant difference in growth rate, daily feed intake, or in feed required per pound of gain, the use of 6 percent meat and bone meal in the ration for growing-fattening pigs can often be used to reduce the costs of producing pork.

TABLE 1. Rations Used to Study the Replacement Value of Meat Meal<sup>1 2</sup>

	1	2	3	4	5	6
Corn (9%)	83.18	83.84	84.56	85.06	84.96	84.66
Soybean Meal (50%)	14.25	12.00	9.70	8.10	8.10	8.10
Meat & Bone Meal (50%)		2.19	4.38	5.84	5.84	5.84
Defluorinated phosphate	1.12	.61				
Limestone	.45	.36	.36			
Trace Mineral salt	.50	.50	.50	.50	.50	.50
Vitamin supplement	.50	.50	.50	.50	.50	.50
Methionine					.10	
Lysine supple- ment (50%)						.40
	100	100	100	100	100	100
Calculated Protein	14.61	14.64	14.65	14.63		
Calcium	.6	.6	.6	.61		
Phosphorus	.5	.51	.49	.55		

<sup>1</sup>The calcium and phosphorus content of the rations were calculated using average values as follows: Meat and bone meal: Calcium 10% and phosphorus 5%.

<sup>2</sup>The meat and bone meal was supplied by the Caroline By-Products Company, Inc., Greensboro, North Carolina.

**TABLE 2. Replacing Varying Amounts of Protein in Corn-Soybean Meal Rations With Meat Meal and its Effect on Performance of Pigs**

	TREATMENTS					
	1 Corn SBM	2 Corn SBM MBM 7.5% of prot.	3 Corn SBM MBM 15% of prot.	4 Corn SBM MBM 20% of prot.	5 No.4 + .1% Methio- nine	6 No.4 + .2% Lysine
No. Pigs	6	6	6	6	6	6
Av. Init. Wt., lbs.	44	43	43	44	43	43
Av. Final Wt., lbs.	206	210	208	208	208	208
<i>First 56 Days</i>						
Av. Da. feed, lbs.	4.54	4.57	4.33	4.66	4.53	4.46
Av. Da. gain, lbs.	1.54	1.59	1.51	1.54	1.60	1.50
Av. Feed/lb. gain	2.95	2.88	2.87	3.03	2.84	2.97
<i>Entire Trial</i>						
Av. Da. feed, lbs.	5.44	5.50	5.24	5.56	5.44	5.58
Av. Da. gain, lbs.	1.63	1.69	1.62	1.66	1.67	1.62
Av. Feed/lb. gain	3.33	3.25	3.23	3.36	3.27	3.43