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MEAT AND BONE MEAL GIVES EXCELLENT RESULTS IN BROILER RATIONS

The feeding trials with broilers at the University of Delaware are continuing. The results of the first trial were summarized in "The Director's Digest," May 20, 1966. Grant support from FPRF has helped Professor Runnels to continue his studies on the utilization of meat and bone meal in practical type rations for broilers. Results from recent trials are summarized below.

Broilers (equal numbers of cockerels and pullets) grown in floor pens showed excellent gains and feed efficiency when fed high energy rations containing meat and bone meal (Table 1). These rations were computer-formulated and the data (Table 1) indicate that the rations containing meat and bone meal were more economical than the control ration or the ration containing fish meal.

Table 1. Gain and Feed Efficiency of Chicks in 8 Weeks on Rations With Different Protein Supplements (25% Protein Starter Rations)

Ration	Ave. Wt. Lbs.	Feed Wt.	Cost $/Ton
Corn-Soy(control)	3.33	2.05	78.96
50% M&B Meal - 7.5%	3.30	2.05	76.96
50% M&B Meal - 7.5%; Fish meal-2.5%	3.35	2.10	78.91
50% M&B Meal - 10%	3.29	2.08	77.85

Since breast blisters are a problem with chicks raised in batteries on wire, a feeding trial was performed to evaluate the effectiveness of meat and bone meal in preventing this condition. The high mineral content of meat and bone meal could be effective in this connection. For these tests 0, 2, 4 and 6% meat and bone meal was added to each

of four high energy commercial broiler rations. The data (Table 2) show that the addition of these levels of meat and bone meal to these feeds did not influence the rate of gain or feed efficiency of the broilers. Very few breast blisters developed in any of the pens. It is of interest that the metabolizable energy of meat and bone meal calculated from the data of this experiment was about 1150 calories per pound rather than the published accepted value of 870.

Table 2. The Influence of 50% Meat and Bone Meal on Gains and Feed Efficiency When Added to Commercial Broiler Rations (9 weeks data; average of 36 cockerels and pullets)

M&B Meal-%:	0		2		4		6	
	Wt. Lbs.	Feed Wt.	Wt. Lbs.	Feed Wt.	Wt. Lbs.	Feed Wt.	Wt. Lbs.	Feed Wt.
Feed A	4.40	1.91	4.34	2.00	4.32	2.01	4.28	1.97
Feed B	4.38	1.98	4.37	1.94	4.37	1.99	4.46	1.98
Feed C	4.19	2.00	4.31	1.96	4.10	1.99	4.20	2.00
Feed D	4.34	1.94	4.45	1.94	4.22	2.00	4.37	1.98

Despite the possible amino acid imbalance and the high mineral levels introduced by adding meat and bone meal to these commercial feeds no adverse effects on growth or feed efficiency were observed. To isolate the effects of high protein from different sources and the possible adverse effects of high calcium, meat and bone meal, soybean oil meal, and precipitated bone were added to a commercial feed in amounts designed to give equivalent additions of protein and minerals. After five weeks broilers fed on these rations showed no differences in gains or feed efficiency (Table 3). No growth or feed efficiency improvement resulted from added proteins and no adverse effects were observed from the rations containing added mineral in the form of precipitated bone or meat and bone meal.

Table 3. Growth and Feed Efficiency of Broilers Fed Commercial Feed With Added Protein and Mineral (5 weeks results)

Ration	Wt. Lbs.	Feed / Wt.
Commercial Feed A (Control)	2.13	1.52
Control + 2% M&B Meal	2.18	1.50
Control + 4% M&B Meal	2.15	1.45
Control + 6% M&B Meal	2.20	1.52
Control + 4.12% Bone	2.07	1.56
Control + 1.03% Bone	2.10	1.47
Control + 2.06% Bone	2.12	1.54
Control + 3.09% Bone	2.12	1.57
Commercial Feed A (Control #2)	2.19	1.50
Control +2.01% SBOM	2.14	1.53
Control + 4.23% SBOM	2.16	1.51
Control + 6.35% SBOM	2.22	1.50
Control + 2.01% SBOM + 1.03% Bone	2.15	1.55
Control + 4.23% SBOM + 2.06% Bone	2.23	1.54
Control + 6.35% SBOM + 3.09% Bone	2.21	1.57

It is clear from the results of these experiments that meat and bone meal up to at least 10% of the ration is an economical protein concentrate for use in high energy broiler rations. Contrary to common belief the high mineral level that may result from using 10% or more of meat and bone meal in broiler rations has no adverse effect on the growth or feed efficiency of the chicks.

Professor Runnels is now preparing a manuscript for publication which will give the details of these feeding trials and show the excellent results that can be obtained with broiler rations containing relatively large amounts of meat and bone meal. This should help to overcome some of the current prejudices against meat and bone meal in high energy computer-formulated broiler rations.