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EXCELLENT RESULTS WITH M & B MEAL IN BROILER RATIONS

You will recall that FPRF is supporting a project under the direction of Professor T. D. Runnels at the University of Delaware to evaluate meat and bone meal as an ingredient in computer-formulated rations for broilers. The first series of feeding trials showed that rations containing up to 7.5% meat and bone meal gave excellent growth and feed efficiency (Table 1). At all three

Table 1. Gain and Feed Efficiency of Chicks Fed Rations Containing Various Protein Supplements
(21% protein rations; Results at 9 weeks)

Ration	Av. Wt. lbs.	Feed Wt.
Corn-Soy (Control)	4.24	2.03
Fish Meal - 3%	4.42	2.05
Dist. Dried Grains with Solubles - 5%	4.42	2.03
Dist. Dried Grains with Solubles - 10%	4.56	2.01
50% Meat and Bone Meal - 2.5%	4.53	2.01
50% Meat and Bone Meal - 5%	4.52	1.97
50% Meat and Bone Meal - 7.5%	4.64	2.01

levels of meat and bone meal gains were superior to those obtained with the corn-soybean meal control ration and equivalent or superior to those obtained with the other protein supplements used to replace part of the soybean meal. It is significant also that the cost per ton of rations containing meat and bone meal were appreciably less than the cost of any of the other rations (e.g. \$65.20 per ton for the ration containing 7.5% meat and bone meal as compared to \$66.74 for the corn-soybean meal control ration). In fact, the computer data showed that less meat meal should be used only if the price exceeded \$110.13 per ton.

A second feeding trial is in progress. The results after five weeks are summarized in Table 2. In this trial also the rations containing meat and bone meal gave results equivalent or superior

Table 2. Gain and Feed Efficiency of Chicks after 5 weeks on Rations with Different Protein Supplements (25% protein rations)

<u>Ration</u>	<u>Av. Wt.</u> <u>lbs.</u>	<u>Feed</u> <u>Wt.</u>
Corn-Soy (Control)	1.75	1.66
50% Meat and Bone Meal - 7.5%	1.81	1.65
50% Meat and Bone Meal - 7.5%; Fish Meal - 2.5%	1.79	1.72
50% Meat and Bone Meal - 10%	1.84	1.63

to those obtained with the other rations. There is no reason to suspect that the results at the conclusion of the trial will differ significantly from the five-weeks results. Again, the ration containing 7.5% meat and bone meal was the least expensive followed by the 10% meat and bone meal ration, the fish meal ration and the corn-soybean control in that order.

TERMINAL HEATER FOR SALMONELLA CONTROL

FPRF has sponsored the construction and testing of a terminal heater. The basic equipment was supplied by The Allbright-Nell Co. and modified and tested by Darling & Company. Essentially the heater consists of a covered, steam jacketed trough, twenty feet long with a twelve inch diameter conveyor screw with interrupted flights to which steel ribbons were welded to give better mixing and increased retention time. With a jacket temperature of 340° F and a screw speed of 30 rpm, the capacity of the unit was about 3,000 lbs/hr. with a final product temperature of 180° F. When heated under these conditions a sample of meat and bone meal containing 24 Salmonella in 25 grams gave a negative test for Salmonella. More rapid, uniform heating could be obtained if super-heated steam was bled into the product near the feed end. Additional studies are planned with higher capacity equipment designed to give more rapid, uniform heating.