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A. S. Mimeo Series 63-9

YEAST IN GROWING-FINISHING RATIONS WITH TWO PROTEIN LEVEL COMPARISONS

R. W. Seerley

In a previous report (A.H. Mimeo Series 62-7) yeast culture was evaluated as an additive to good growing-finishing swine rations. Yeast did not have an effect on daily gain; however, feed efficiency was improved 6 per cent when 2 per cent yeast was included in the ration.

If yeast has an enzyme action and digestion value, the yeast should improve a ration that is formulated with less crude protein than normally provided. An experiment was designed to compare levels of yeast and two levels of crude protein.

Experimental Procedure

Forty-eight weanling pigs were allotted into 8 pens for a factorial experiment. The treatment comparisons were 0, 1, 2 or 3% yeast. Each level of yeast was replicated with a high or low level of crude protein in the ration. The high level is actually the current recommended level for growing-finishing pigs. The grower ration (15% crude protein) was fed to 110 pounds body weight, then a finisher ration (12.4% crude protein) was fed to market weight. The low protein rations had less protein than is recommended. The 13.7% crude protein grower ration was fed to 110 pounds, then the finisher (11.2% crude protein) was fed thereafter. The rations are shown in table 1. The yeast was provided by Diamond V Company. Feed and water were fed ad libitum.

Results and Discussion

The results are shown in table 2. Yeast did not improve rate of gain when rations adequate in crude protein were fed; however, yeast-fed pigs gained faster than the control pigs when the crude protein level was low in the rations. Although the rations were improved with the yeast, daily gains of pigs given less protein were slower than daily gains of pigs fed more protein. More than 13.7% crude protein in the grower ration and 11.2% crude protein in the finishing ration are necessary for optimum gains.

Average daily feed consumption was variable among the yeast treatments, but pigs fed a higher percentage of protein in the ration ate more feed than those pigs given less protein in 3 of 4 cases.

Feed efficiency was excellent for all lots. Although differences were small, the pigs fed the two high levels of yeast and the pigs fed low protein rations required slightly less feed per pound of gain. Pigs fed the low protein ration required only 2.86 pounds of feed per pound of gain, which was contrary to the expected effect of a protein deficient ration. Usually more feed per unit of gain is required when a ration is low in protein or not balanced. Perhaps the feed required per pound of gain was not adversely affected, since the rations were not seriously low in protein.

Table 1. Composition of rations[1]

	Grower High Protein	Grower Low Protein	Finisher High Protein	Finisher Low Protein
Yellow corn	804	860	895	923
Soybean meal	125	93	63	50
Tankage	40	30	25	10
Dicalcium phosphate	5	5	5	5
Limestone	5	5	5	5
T.M. salt, hi zinc	5	5	5	5
Trace mineral	0.5	0.5	--	--
Vitamin-antibiotic premix[2]	+	+	+	+
Calculated crude protein, %	15.3	13.7	12.4	11.2

1 Yeast replaced corn pound for pound in the ration. Yeast analyzed slightly higher in crude protein than corn.

2 Premix provided 1 mg. of riboflavin, 2 mg. of pantothenic acid, 4.5 mg. of niacin, 5 mg. of choline chloride, 5 mcg. of vitamin B_{12}, 900 USP units of vitamin A, 115 USP units of vitamin D, 7.5 mg. of chlortetracycline, and 6 mg. of Hygromycin per pound of ration. Hygromycin was excluded in the finisher rations.

Table 2. Yeast in rations for growing-finishing pigs

Treatment Lot No.		Control 1	1% Yeast 2	2% Yeast 3	3% Yeast 4	Av.
No. pigs per lot	Hi Pro	6	5	6	6	
	Lo Pro	6	6	6	6	
Av. initial wt., lb.	Hi Pro	42.3	42.3	42.3	42.5	
	Lo Pro	42.5	42.0	42.3	42.3	
Av. final wt., lb.	Hi Pro	200.8	200.2	201.7	201.7	
	Lo Pro	195.2	201.7	200.1	200.7	
Days on exp.	Hi Pro	87.0	92.0	94.5	88.0	
	Lo Pro	99.0	95.0	92.0	95.0	
Av. daily gain, lb.	Hi Pro	1.82	1.72	1.69	1.81	1.76
	Lo Pro	1.54	1.68	1.72	1.67	1.65
	Av.	1.67	1.70	1.70	1.73	
Av. daily feed, lb.	Hi Pro	5.50	5.62	4.73	5.29	5.25
	Lo Pro	4.36	4.92	4.99	4.64	4.72
	Av.	4.87	5.23	4.86	4.95	
Feed per lb. gain, lb.	Hi Pro	3.00	3.27	2.81	2.92	2.99
	Lo Pro	2.82	2.93	2.91	2.79	2.86
	Av.	2.91	3.08	2.86	2.85	