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Antibiotics for Growing-Finishing Swine

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The use of antibiotics in swine rations has become a recognized practice to the point where most swine growing-finishing rations contain them. There is evidence that certain antibiotics added to rations improve the growth rate of pigs under most conditions but not always. The most commonly reported effect of antibiotics is a more uniform growth response of the pigs. Fewer unthrifty, slow-growing individuals occur in a group of pigs, and thus the average rate of gain is increased. There is usually little or no improvement in the performance of the more rapidly growing pigs.

During the past few years, new antibiotic feed supplements have been introduced for addition to swine feeds. The objective of the following experiment was to study the effectiveness of new antibiotics and certain combinations of these antibiotics for stimulating gains in growing-finishing swine.

Experimental Procedure

Forty-eight Duroc, Hampshire and Yorkshire pigs, in two separate groups of 24, were randomly allotted into six lots of four pigs each according to breed, sex, weight, and general condition. The first group (6 lots) was started on test January 15, 1965 and the second group was started on test two weeks later. The six experimental treatments were:

Lot 1 and 7	Basal ration (no antibiotics)
Lot 2 and 8	Basal plus 10 gm. chlortetracycline per ton
Lot 3 and 9	Basal plus 5 lb. SP 250 per ton to 75 lb. then 10 gm. chlortetracycline per ton thereafter
Lot 4 and 10	Basal plus 1 lb. SP 250 per ton to 75 lb. then 10 gm. chlortetracycline per ton thereafter
Lot 5 and 11	Basal plus 5 lb. 290 per ton to 75 lb. then 10 gm. oxytetracycline per ton thereafter
Lot 6 and 12	Basal plus 1 lb. 290 per ton to 75 lb. then 10 gm. oxytetracycline per ton thereafter

The SP 250 and 290 contained the following ingredients per pound:

<u>SP 250</u>	<u>290</u>
20 gm. chlortetracycline	20 gm. oxytetracycline
20 gm. sulfamethazine	20 gm. Nf 180
10 gm. penicillin	18 gm. arsanilic acid

The basal feed mixture is presented in table 1. All pigs, raised in confinement, were fed by using self-feeders and water was provided ad libitum. The pigs were weighed off experiment by treatment groups at an average weight of approximately 200 pounds.

Table 1. Composition of Rations

	Grower ¹ (16% protein)	Finisher (12% protein)
Ground shelled corn	1632	1810
Soybean meal (50%)	280	110
Meat and bone scraps (50%)	50	50
Dicalium phosphate	18	12
Ground limestone	8	6
T. M. salt, hi zinc	5	5
Vitamin premix ²	+	+

¹ Grower rations were fed to approximately 110 pounds body weight.

² Premix provided 2 mg. of riboflavin, 4 mg. of pantothenic acid, 9 mg. niacin, 10 mg. of choline chloride, 5 mcg. of vitamin B₁₂, 1135 I.U. of vitamin A, and 336 I.U. of vitamin D per pound of ration.

Results

A summary of the results is presented in table 2. The lots receiving the control ration (no antibiotics) gained as fast as the other treatment groups. Pigs fed the one pound of 290 per ton gained the slowest. There should not be any treatment effect to make these pigs gain more slowly than the pigs fed no antibiotics. Apparently the treatment level was not adequate to show a growth response. Occasionally one replicate group of pigs will gain slowly on a treatment such as this one, but in this case both replicates on the low level of 290 gained slower than the other pigs in the experiment. The pigs of the second replicate group gained slightly faster than the first group. This difference may have been due to a difference in the winter temperature.

Feed required per pound of gain was essentially the same for all treatment groups. The pigs receiving no antibiotics were as efficient as the pigs receiving the antibiotics.

Although the antibiotic-fed pigs in this experiment did not gain any faster it is not recommended that antibiotics be eliminated from swine growing-finishing rations. Previous work at this station (1959 Swine Day and A.H. Swine 5, 1960) showed that some antibiotics increased daily gains and improved feed efficiency.

The benefit of antibiotics in rations is usually determined by the degree of stress upon the pigs. Under conditions of stress, such as disease infection and low quality rations, the improvement in efficiency of feed utilization and rate of gain is much greater. Since conditions of stress are common in average farm operations, antibiotic response may be greater than under experiment station conditions. This must be kept in mind in applying the antibiotic data to average farm conditions.

Table 2. Supplemental Antibiotics for Growing-Finishing Pigs

Treatment		Control (No antibiotic)	Aureo- mycin	5 lb. SP 250 chlortetra- cycline	1 lb. SP 250 chlortetra- cycline	5 lb. 290 oxytetra- cycline	1 lb. 290 oxytetra- cycline
Lot numbers		1,7	2,8	3,9	4,10	5,11	6,12
No. of pigs	1	4	4	4	4	4	4
	2	4	4	4	4	4	4
Av. initial wt., lb.	1	50.0	44.0	44.0	44.2	43.8	47.8
	2	35.8	35.0	35.0	35.8	35.5	35.0
	Av.	42.8	39.5	39.5	40.0	39.6	41.4
Av. final wt., lb.	1	203.5	199.0	200.5	204.5	201.8	200.0
	2	200.0	200.5	200.3	200.3	200.0	201.0
	Av.	201.8	199.8	200.4	202.4	200.9	200.5
Av. daily gain, lb.	1	1.81	1.78	1.89	1.84	1.82	1.62
	2	1.98	1.95	1.94	1.94	1.87	1.71
	Av.	1.89	1.86	1.92	1.89	1.84	1.67
Av. daily feed, lb.	1	5.34	5.46	5.84	5.86	5.49	5.45
	2	6.02	5.80	5.39	5.87	6.06	4.82
	Av.	5.67	5.63	5.61	5.86	5.78	5.13
Feed per lb. gain, lb.	1	2.95	3.06	3.10	3.18	3.02	3.37
	2	3.04	2.98	2.77	3.03	3.24	2.81
	Av.	3.00	3.02	2.93	3.10	3.14	3.08

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