

III. Feed Additives in Pig Starter Rations.

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Three experiments were conducted to determine the efficacy of certain feed additives, alone or in various combinations, in improving performance of pigs weaned at 4 weeks of age. In the first two, each treatment group of pigs was confined to a 3½- by 8-foot concrete-floored pen in the central farrowing unit. In the third experiment 3- by 6-foot pens with either flattened expanded metal or wood slat floors were used. A 250-watt light was suspended above the sleeping area in each pen to provide supplementary heat. Wood shavings were used for bedding in the first two experiments, but no bedding was used in the third experiment.

Feed was available at all times from one self-feeder per pen. Water was provided three times daily in troughs in the first two experiments, while self-service drinking cups were available in the third experiment.

Results are shown in Tables 46, 47, and 48.

Rates of gain among ration treatments differed significantly in the first two experiments, and approached significance in experiment 3.

Aureo S.P.-250 at 125 mgs. per pound of ration resulted in the highest rates of gain in experiments 1 and 2. In experiment 2, at 40 mgs. per pound, it stimulated gain at a rate comparable to the other antibiotics.

In experiment 3 the combination of tylosin and neomycin stimulated gains over that of either antibiotic alone.

All pigs appeared healthy and in good condition at the start of each experiment. The beneficial effects of the respective additives appear to be mediated through increased daily feed intake, which resulted in more rapid and efficient gains.

Table 46

Antibiotics and sulfamethazine in starter rations, September 18 to October 16, 1964.

Feed additive	Mgs. per lb. of ration	Source	Av. daily gain, lbs. ²	Av. daily feed, lbs.	Feed per lb. of gain, lbs.
None	0		0.31	0.77	2.47
Chlortetracycline	40	Aurofac-10 ¹	0.43	1.01	2.37
Tylosin	40	Tylan-10 ¹	0.48	0.92	1.92
Chlortetracycline	50	Aureo S.P.-250 ³	0.71	1.12	1.53
Sulfamethazine	50				
Penicillin	25				
Bacitracin	40	Fortracin-Bacitracin ³	0.40	0.87	2.13
Neomycin	40	Neomycin Sulfate ⁴	0.48	0.91	1.88
Bacitracin	20	Neomycin Sulfate ⁴	0.43	0.89	2.04
Neomycin	20				

1. Contained 10 grams of antibiotic activity per pound.

2. Contained 20 grams each of chlortetracycline and sulfamethazine, and 10 grams of penicillin (from procaine penicillin) per pound.

3. Bacitracin Methylene Disulicylate (S. B. Penick & Co.), 25 grams bacitracin activity per pound.

4. Contained 227.5 grams neomycin activity per pound (S. B. Penick & Co.).

5. Each figure represents an average performance of 2 pens of 5 pigs each. Initial ages and weights were about 30 days and 15.5 pounds, respectively. Test lasted 28 days. Differences in rates of gain were statistically ($p < .01$) significant.

Table 47

Antibiotics and sulfamethazine in starter rations, December 4, 1964, to January 4, 1965.

Feed additive	Mgs. per lb. of ration	Source	Av. daily gain, lbs. ⁴	Av. daily feed, lbs.	Feed per lb. of gain, lbs.
None	0		0.52	0.72	1.65
Chlortetracycline	40	Aurofac-10 ¹	0.70	1.18	1.68
Tylosin	40	Tylan-10 ¹	0.61	1.02	1.64
Neomycin	40	Neomycin-sulfate ²	0.67	1.05	1.59
Chlortetracycline	50	Aureo S.P.-250 ³	0.83	1.42	1.72
Sulfamethazine	50				
Penicillin	25				
Chlortetracycline	16	Aureo S.P.-250 ³	0.68	1.15	1.69
Sulfamethazine	16				
Penicillin	8				

1. Contained 10 grams of antibiotic activity per pound.

2. Contained 227.5 grams neomycin activity per pound.

3. Aureo S.P.-250 contains 20 grams each of chlortetracycline and sulfamethazine and 10 grams of penicillin (from procaine penicillin) per pound.

4. Each figure represents an average performance of 2 pens of 5 pigs each. Initial ages and weights average about 29 days and 16.5 pounds, respectively. Test lasted 31 days. Differences in rates of gain were statistically ($p < .01$) significant.

Table 48

Feed additives in starter rations, March 2 to March 30, 1965.

Additive	Mgs. per lb. or % of ration	Source	Av. daily gain, lbs. ¹	Av. daily feed, lbs.	Feed per lb. of gain, lbs.
None			0.50	1.04	2.04
Tylosin	40	Tylan-10 ¹	0.51	0.96	1.98
Neomycin	40	Neomycin sulfate ²	0.58	1.01	1.74
Tylosin	20	Tylan-10	0.73	1.20	1.64
Neomycin	20	Neomycin sulfate			
Kayexolate ³	1.0 %		0.42	0.87	2.13
Kayexolate ³	3.0 %		0.54	1.04	1.97

1. Contained 10 grams of antibiotic activity per pound.

2. Contained 227.5 grams neomycin activity per pound.

3. Sodium polystyrene sulfonate cation exchange resin (equilibrated in Krebs-Ringer Solution prior to mixing in ration).

4. Each figure represents average performance of 11 pigs, 6 pigs and 5 pigs per group in replicates 1 and 2, respectively. Pens were 3' x 6' in size, expanded metal floors for replicate 1 and wood slat floors for replicate 2. Initial ages and weights were about 27 days and 16.5 lbs., respectively. Test lasted 28 and 22 days, respectively, for replicates 1 and 2.