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Rations for Early Weaned Pigs

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One of the most critical times in the nutrition of the pig is during the first few weeks after weaning. This is particularly true if the pigs are weaned at an age of 3 to 4 weeks or younger. During the past two years an experiment has been in progress at this station to study different ration ingredients in rations for pigs weaned at about 3 weeks of age in order to determine if more economical rations can be developed that will be highly palatable and support rate and efficiency of gains comparable or superior to more complex rations.

The trials reported here were designed to study certain feed additives as growth promotants, to compare a simple and more complex ration and to study the effect of protein level in rations for early weaned pigs.

Experimental Procedure

Sixty-three pigs averaging about 4 weeks of age were used in the first trial. The pigs were allotted into 9 lots of seven pigs each with three lots receiving each of the following three ration treatments per ton of feed:

- Treatment 1 - 100 gm. chlortetracycline, 100 gm. sulfamethazine and  
50 gm. penicillin
- Treatment 2 - 100 gm. Tylan
- Treatment 3 - 100 gm. Tylan and 100 gm. sulfamethazine

The pigs were confined in inside pens 8 ft. x 10 ft. with water and feed provided ad libitum. The trial was conducted for 28 days. Composition of the ground ration is shown in table 1.

In trial II, 80 pigs approximately 3 weeks of age were allotted into two replicate groups of five lots each and fed for 5 weeks. Management was similar to trial I. The composition of the rations is shown in table 2. A fortified complex ration containing corn, rolled oats, soybean meal, dried skim milk and sugar was compared to a simple fortified corn-soybean meal ration at both 20% and 16% protein levels. Treatments were as follows:

- Treatment 1 - Complex 20% protein ration
- Treatment 2 - Corn-Soy 20% protein ration
- Treatment 3 - Corn-Soy 16% protein ration
- Treatment 4 - Complex 16% protein ration
- Treatment 5 - Corn-Soy 20% protein ration plus neomycin

Table 1. Composition of Basal Ration, Trial I

	Percent
Ground yellow corn	38.0
Rolled oats (hulled)	30.0
Soybean meal (50%)	24.0
Sugar	5.0
Dicalcium phosphate	1.6
Ground limestone	0.6
Trace mineral salt	0.5
Vitamin premix <sup>a</sup>	0.3

<sup>a</sup> Provided 1135 I.U. vitamin A, 340 I.U. vitamin D, 4 mg. riboflavin, 8 mg. calcium pantothenate, 16 mg. niacin, 20 mg. choline and 10 mcg. vitamin B<sub>12</sub> per pound of ration.

Table 2. Composition of Rations, Trial II (Percent)

	Complex 20% C.P.	Corn-Soy 20% C.P.	Corn-Soy 16% C.P.	Complex 16% C.P.	Corn-Soy 20% C.P. + Neomycin
Ground yellow corn	34.0	69.0	80.0	44.0	69.0
Rolled oats (hulled)	30.0	--	--	30.0	--
Soybean meal (50%)	18.0	27.5	17.0	8.0	27.5
Dried skim milk	10.0	--	--	10.0	--
Sugar	5.0	--	--	5.0	--
Dicalcium phosphate	1.4	2.0	1.7	1.6	2.0
Ground limestone	0.6	0.6	0.6	0.6	0.6
Trace mineral salt	0.5	0.5	0.5	0.5	0.5
Vitamin-antibiotic premix	0.3 <sup>a</sup>	0.3 <sup>a</sup>	0.3 <sup>a</sup>	0.3 <sup>a</sup>	0.3 <sup>b</sup>

<sup>a</sup> Provided 1135 I.U. vitamin A, 340 I.U. vitamin D, 4 mg. riboflavin, 8 mg. calcium pantothenate, 16 mg. niacin, 20 mg. choline, 10 mcg. vitamin B<sub>12</sub>, 50 mg. aureomycin, 50 mg. sulfamethazine and 25 mg. penicillin per pound of ration.

<sup>b</sup> All vitamins as listed above plus 25 mg. aureomycin, 25 mg. sulfamethazine, 12.5 mg. penicillin and 25 mg. neomycin per pound of ration.

Table 3. Summary of Trial I

	Chlortetracycline Sulfamethazine Penicillin	Tylan	Tylan Sulfamethazine
No. of pigs	20 <sup>a</sup>	19 <sup>b</sup>	19 <sup>b</sup>
Av. initial wt., lb.	17.0	17.2	17.2
Av. final wt., lb.	41.1	35.9	38.5
Av. daily gain, lb.	0.86	0.69	0.76
Av. daily feed, lb.	1.58	1.39	1.63
Av. feed per lb. gain, lb.	1.84	2.03	2.14

<sup>a</sup> Three lots of seven pigs each, one pig removed.

<sup>b</sup> Three lots of seven pigs each, one pig died, one pig removed.

Table 4. Summary of Trial II

	Rep.	Complex 20% C.P.	Corn-Soy 20% C.P.	Corn-Soy 16% C.P.	Complex 16% C.P.	Corn-Soy 20% C.P. + Neomycin
No. of pigs	1	7 <sup>a</sup>	8	8	7 <sup>a</sup>	8
	2	8	7 <sup>a</sup>	8	7 <sup>a</sup>	8
Av. init. wt., lb.	1	16.7	17.2	17.2	17.4	17.2
	2	13.6	13.9	13.6	13.7	13.5
Av. final wt., lb.	1	48.4	42.4	38.5	40.3	43.1
	2	33.5	32.4	32.8	30.6	38.8
Av. daily gain, lb.	1	0.91	0.72	0.61	0.65	0.74
	2	0.57	0.53	0.55	0.48	0.72
	Av.	0.73	0.63	0.58	0.57	0.73
Av. daily feed, lb.	1	1.81	1.58	1.66	1.63	1.54
	2	1.25	1.59	1.24	1.31	1.43
Av. feed per lb. gain, lb.	1	2.00	2.20	2.73	2.50	2.09
	2	2.21	3.00	2.26	2.73	1.98
	Av.	2.08	2.52	2.51	2.60	2.03

<sup>a</sup> One pig died, data not included.

### Results

A summary of the results of trial I is presented in table 3. Pigs receiving the chlortetracycline-sulfamethazine-penicillin combination gained faster and more efficiently than pigs fed the other additives. One of the three lots receiving Tylan in the feed had a lower feed intake and gained only 0.54 pound per day which resulted in the lower average rate of gain for this treatment. Feed efficiency was quite good for all treatments although considerable variation existed between lots even on the same treatment.

Table 4 summarizes the results of trial II. The data are presented for each replicate since the heavier pigs were allotted to replicate 1 and the lighter pigs to replicate 2.

Although there was no difference in average age of the pigs in the two replicates the heavier pigs gained faster than the lighter pigs in each treatment. This was due primarily to their faster adjustment to the ration after weaning and a greater consumption during the first two weeks of the trial.

Pigs fed the 20% protein rations gained faster than those fed the 16% protein rations in replicate 1 but the difference in gains was negligible in replicate 2 except for treatment 5. This is difficult to explain since we have conducted much research that indicates a 16% protein ration is not adequate for pigs of this age and weight.

Another reason for feeding a 16% protein ration was to see if differences existed in feces consistency as it is often claimed that scouring in young weaned pigs is due to protein level of the ration. In this trial scouring was observed in the pigs fed the complex 20% protein ration containing dried skim milk, rolled oats and sugar in addition to corn and soybean meal. The scouring commenced near the end of the first week and persisted for several days, however, the pigs continued to gain during this period and were the fastest gaining pigs during the entire trial.

Pigs fed the 20% protein corn-soy ration containing neomycin gained faster and more efficiently than those pigs fed a similar ration without neomycin. It was observed that the pigs receiving neomycin appeared to adjust to the ration and the stress of weaning much more rapidly as in both replicates these pigs had the greatest gains the first week of the experiment.

### Summary

Three week old pigs weighing approximately 17 pounds gained about 25% faster than pigs weighing 13.5 pounds during a five week post weaning period. Pigs fed rations of 20% crude protein gained about 0.10 pound per day faster than those fed 16% protein rations and also required less feed per pound of gain. The complex ration containing dried skim milk, sugar and rolled oats as additional ingredients appeared to be preferred to the corn-soy ration at the 20% protein level but not at the 16% protein level. Neomycin added to the 20% protein corn-soy ration resulted in gains and efficiency similar to the complex 20% protein ration.

Pigs fed rations containing a chlortetracycline-sulfamethazine-penicillin combination gained faster and more efficiently than those fed Tylan or Tylan-sulfamethazine combination.