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Effect of Organic Iron in Starter and Grower Diets

Richard C. Wahlstrom and George W. Libal

The necessity of supplying supplemental iron to nursing pigs is well established. Data are less conclusive on the effect of supplemental iron in the diets of pigs consuming dry diets. Most research has not shown an advantage of adding extra iron over that found in natural ingredients. However, some swine producers have reported a benefit from feeding relatively high levels of iron to growing pigs. Recently some farm trials have shown a benefit of adding an organic iron compound to the ration of early weaned pigs.

The objective of this trial was to determine the benefit of adding an organic iron (Swinacol 600) to the diets of early weaned or growing pigs.

Experimental Procedure

Two trials were conducted. In trial 1, 96 5- to 6-week-old crossbred pigs weighing an average of 23 lb. were allotted six pigs per pen to four treatments replicated four times. The pigs were housed in 8 by 8 foot, concrete floored pens bedded with wood shavings. The composition of the basal diet is shown in table 1. The source of organic iron was Swinacol 600 which contained 7.5% iron. It was added to the diet at levels of 0, 2.5, 5.0 and 7.5 lb. per ton to supply 0, 85, 170 and 255 grams of iron per ton for treatments 1, 2, 3 and 4, respectively. The trial was conducted for 4 weeks.

Trial 2 utilized 144 crossbred pigs averaging about 60 lb. in weight. They were allotted on the basis of ancestry, weight and sex to 12 lots of 12 pigs each. Six of the lots were fed the basal diets (table 2) and six lots received the basal diet plus 5 lb. of Swinacol 600 per ton of diet. Three lots of pigs from each treatment were housed in a slatted floor confinement building and the other half of the pigs were housed in open-front, uninsulated wooden buildings with outside concrete feeding floors. This trial was conducted for 8 weeks.

Feed and water were provided ad libitum in both trials.

Results

A summary of the results of trial 1 are shown in table 3. There were no significant differences among treatments. Rates of gain were .90, .91, .97 and .96 lb. per day and feed/gain was 2.12, 2.07, 2.08 and 2.10 for pigs fed 0, 2.5, 5.0 and 7.5 lb. per ton of organic iron, respectively. The data suggest that the basal diet contained adequate iron for the young weaned pig.

The data for the growing pig trial (trial 2) are shown in table 4. Pigs fed the organic iron, at a level of 170 grams per ton, gained 1.69 lb. per day and those pigs without supplemental iron gained 1.64 lb. per day. Feed efficiency was similar between the two treatment groups. Slightly more feed was consumed daily by pigs fed the diet containing supplemental iron (5.3 vs 5.2 lb. per day). Both groups of pigs performed satisfactorily in all respects. No scours or other disease problems were observed. As in trial 1 with young weaned pigs, this trial with growing pigs suggests that the basal diet was not improved by the addition of supplemental organic iron.

#### Summary

Ninety-six young weaned pigs averaging about 23 lb. and 144 growing pigs averaging 61 lb. were used to study the effect of supplemental organic iron on pig performance.

There were no significant effects on rate of gain, feed consumption or feed/gain with the addition of 85, 170 or 255 grams of organic iron per ton in starter diets or 170 grams per ton in grower diets.

Table 1. Composition of Basal Diet - Trial 1

	Percent
Ground yellow corn	73.1
Soybean meal, 48%	24.2
Dicalcium phosphate	1.4
Limestone	.8
Trace mineralized salt	.4
Premix <sup>a</sup>	.1

<sup>a</sup> Supplied per lb. of diet: vitamin A, 2000 IU; vitamin D, 200 IU; vitamin E, 3 mg; vitamin K, 1.2 mg; riboflavin, 1.5 mg; pantothenic acid, 6 mg; niacin, 9.6 mg; choline, 60 mg; vitamin B<sub>12</sub>, 6 mcg; aureomycin, 50 mg; penicillin, 25 mg and sulfamethazine, 50 milligrams.

Table 2. Composition of Basal Diets - Trial 2 (Percent)

	16% protein to 110 lb.	14% protein 110-155 lb.
Ground yellow corn	76.5	82.2
Soybean meal, 44%	20.7	15.0
Dicalcium phosphate	1.2	1.2
Ground limestone	.9	.9
Trace mineralized salt	.5	.5
Premix <sup>a</sup>	.2	.2

<sup>a</sup> Supplied per lb. of diet: vitamin A, 1500 IU; vitamin D, 150 IU; vitamin E, 2.5 IU; vitamin K, 1 mg; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 8 mg; choline, 50 mg; vitamin B<sub>12</sub>, 5 mcg and aureomycin, 10 milligrams.

Table 3. Effect of Organic Iron in Pig Starter Diets

	Level of organic iron, grams/ton			
	0	85	170	255
Number of pigs <sup>a</sup>	24	24 <sup>b</sup>	24 <sup>c</sup>	24
Avg. initial wt., lb.	23.1	23.2	23.6	23.0
Avg. final wt., lb.	48.2	48.6	50.8	49.9
Avg. daily gain, lb.	.90	.91	.97	.96
Avg. daily feed cons., lb.	1.90	1.87	2.03	2.01
Feed/gain	2.12	2.07	2.08	2.10

<sup>a</sup> Four replicates of six pigs per treatment.

<sup>b</sup> One pig removed, replicate 4, growth failure, data omitted.

<sup>c</sup> One pig removed, replicate 3, two pigs removed, replicate 4, growth failure, data omitted.

Table 4. Effect of Organic Iron in Diets of Growing Pigs

	Control	Iron 170 grams per ton
Number of pigs <sup>a</sup>	72	72
Avg. initial wt., lb.	61.4	61.4
Avg. final wt., lb.	153.4	156.2
Avg. daily gain, lb.	1.66	1.69
Avg. daily feed cons., lb.	5.22	5.34
Feed/gain	3.14	3.15

<sup>a</sup> Six lots of 12 each per treatment.