

The Value of A Supplemental Mixture Fed with Cereal Grain

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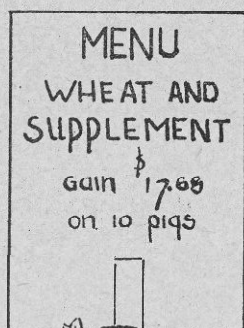
Reasons for the Trial

The advisability of feeding a supplemental mixture, which provides protein, calcium, phosphorus, vitamin A and vitamin D, to pigs which are receiving cereal grain, is often questioned. Cereal grains usually are home grown while supplements must be purchased and usually cost considerably more than grain. The purchase of supplemental feeds at prices which are much higher than the cost of cereal grain does not appear quite reasonable to many farmers.

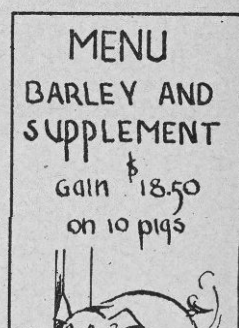
Cereal grains consist principally of starch, which is used to produce energy and to form fat in the body. They are relatively low in protein, and the proteins which they contain do not meet the needs of the growing pig very well. Cereals are also low in calcium and phosphorus, both required by growing pigs. None of the grains contain vitamin D and, except for yellow corn, none of them contain appreciable amounts of vitamin A. Because the substances just mentioned are all required by growing pigs to provide



COST \$14.13
per 100 lb gain



COST 8.09
per 100 lb gain



COST 7.36
per 100 lb gain

for normal growth, the addition of feeds which contain them to cereal grains might be expected to promote more rapid and more economical gains in pigs.

Description of the Trial

To demonstrate the value of a supplemental mixture fed with cereal grain, a trial was conducted at the Williston Branch Station in 1944-45. Thirty weanling pigs were purchased locally, about June 1, 1945. They were divided into three uniform lots of 10 pigs each and started on the trial on June 6. Lot 1 received wheat alone, Lot 2 received wheat plus a supplemental mixture, and Lot 3 was fed barley plus the same kind of supplement as Lot 2. The supplement consisted of 50 per cent soybean meal, 25 per cent meat and bone meal and 25 per cent alfalfa meal, by weight. The grain was ground for all three lots and the supplement was mixed with the ground grain.

The pigs were identified individually with ear notches and individual liveweight records were kept. They were lot fed twice daily. They were fed in a hog house, but had access to outside dirt lots.

By August 1, the pigs in Lot 1, receiving wheat alone, showed marked evidences of vitamin A deficiency. A vitamin A concentrate was added to the wheat, to enable these pigs to remain in the trial.

The results of the trial, from June 6 to October 10 are summarized in Table 1.

Discussion of First Part of Trial

Lot 1 made very slow gains, 0.3 pound daily. Neither Lot 2 or Lot 3 had made rapid gains, but their gains were much more satisfactory

Table 1.
Summary of Feed and Weight Records
June 6, 1944 to October 10, 1944

	Lot 1	Lot 2	Lot 3
	(1) Wheat alone	(2) Wheat and Supplement	(2) Barley and Supplement
	Pounds	Pounds	Pounds
Number of pigs	10	10	10
Total final weight	631	1302	1465
Total initial weight	248	251	247
Total gain	383	1051	1218
Total pig days	1260	1260	1260
Average daily gain	0.30	0.83	0.97
Feed Consumed			
Wheat	2493	3184	
Barley			3359.0
Supplement		518	787.0
Total	2493	3702	4146.0
Feed Consumed			
Per 100 Pounds gain			
Wheat	650.9	303.3	
Barley			275.8
Supplement		49.3	64.6
Total	650.9	352.6	340.4

(1) A vitamin A concentrate was added to the wheat, beginning about August 1.

(2) The supplement consisted of 50 per cent soybean oil meal, 25 per cent meat and bone meal, and 25 per cent alfalfa meal, by weight, and contained approximately 36 per cent protein.

Table 2
Summary of Feed and Weight Records
October 11, 1944 to February 24, 1945

	Lot 1	Lot 2	Lot 3
	Pounds	Pounds	Pounds
Number of pigs	10	10	10
Total final weight	2354	2358	2320
Total initial weight	631	1302	1465
Total gain	1723	1056	855
Pig days	1128	532	476
Average daily gain	1.52	1.98	1.79
Feed Consumed			
Wheat	5898	3765	
Barley			3373
Supplement	763	419	596
Total	6661	4184	3969
Feed Consumed			
per 100 pounds gain			
Wheat	342.3	356.5	
Barley			394.5
Supplement	44.3	39.6	69.6
Total	386.6	396.1	464.1

than those of Lot 1. The condition of the pigs in Lots 2 and 3 was far better than of those in Lot 1. The pigs in Lot 1 ate 650.9 pounds of wheat for each 100 pounds gain in weight, while those in Lot 2 ate 352.6 pounds of wheat and supplement and those in Lot 3 had eaten 340.4 pounds of barley and supplement for each hundred pounds gain in weight.

Discussion of Second Part of Trial

Because of the slow gains and poor condition of the pigs in Lot 1, the supplemental mixture was added to their feed, beginning October 11. The pigs in Lots 2 and 3 were continued on the same feeds as before, except for a slight reduction in the proportion of the supplement. The results of this part of the trial are summarized in Table 2.

The pigs in Lot 1 began to eat the feed better almost immediately after the supplement was added. Their gains also increased. Their average daily gain was just five times as rapid for this period as it was dur-

ing the first period. The gains of the pigs in Lot 2 were slightly over twice as rapid and in Lot 3 not quite twice as rapid. The difference in the amount of feed required to produce one hundred pounds gain, in Lot 1 also was quite marked. The pigs in Lots 2 and 3, being already well grown at the start of this second period, required more feed to produce 100 pounds gain than during the first period. This is normal.

The number of days required by the pigs in the three lots to reach market weight should be noted. The pigs were removed from the experimental lots and sold at individual weights between 230 and 240 pounds in most cases. All the pigs were in the trial from June 6 to October 10 or 126 days. From October 11 to the end of the trial, the pigs in Lot 1 required an average of nearly 113 days to reach market weight, the last pig being weighed out of this lot on February 24. The pigs in Lot 2 reached market weight in about 53 days, on the average, after October 11 and the last one was sold on January 16. In Lot 3 the pigs

Table 3
Average Daily Gains and Amounts of Feed Required
per 100 Pounds Gain By Periods

	Lot 1	Lot 2	Lot 3
	Pounds	Pounds	Pounds
Average daily gain			
June 6 to October 10	0.30	0.83	0.97
October 11 to end of trial	1.52	1.98	1.79
June 6 to end of trial	0.88	1.18	1.19
Feed required per 100 pounds gain—			
June 6 to October 10	650.9	352.6	340.4
October 11 to end of trial	386.6	396.1	464.1
June 6 to end of trial	434.7	374.2	391.4

Table 4
Costs of Producing the Pigs, Selling Prices and Profit or Loss

	Lot 1	Lot 2	Lot 3
Cost of 10 pigs	\$ 50.00	\$ 50.00	\$ 50.00
Value of grain	179.08	150.79	134.64
Cost of supplement	24.77	30.39	44.87
Labor costs	47.76	35.84	34.72
Miscellaneous	20.00	12.00	12.00
Total	321.61	279.02	276.23
Selling Price	319.19	296.70	295.20
Profit or loss on 10 pigs.....	-2.42	17.68	18.97

reached market weight in an average of about 48 days after October 11, the last one being sold on December 19. All the pigs were marketed from Lot 3 and only two pigs had not reached market weight in Lot 2 when the first pig had reached market weight in Lot 1.

Summaries of the average daily gains and of the feed required to produce one hundred pounds gain for the entire period, June 6 to the end of the trial, are included in Table 3.

Total costs for the three lots and returns from the sale of the pigs, are shown in Table 4. These are actual costs in nearly all cases. The pigs cost \$5.00 a head. Wheat was valued at \$1.30 a bushel and barley at 96¢ a bushel. Both grains were produced on the station farm. The soybean meal, meat and bone meal and alfalfa meal were all purchased lo-

cally, and the costs of these materials amounted to \$65.00 a ton for the mixture. Miscellaneous costs include vaccination for cholera and the vitamin A concentrate in Lot 1. Labor was charged at 2 cents per pig daily. The selling price is the amount actually received for the pigs, which were sold locally. The pigs in Lots 2 and 3 were sold during the season when hogs were lowest in price, while those in Lot 1 were sold later, when the prices had strengthened.

These figures include both the costs and the benefits of the supplement in Lot 1. The total feed costs during the first period, June 6 to October 10, were \$54.10 for Lot 1, \$84.94 for Lot 2 and \$92.77 for Lot 3. But the feed costs per hundred pounds gain were \$14.13 for Lot 1, \$8.09 for Lot 2 and \$7.36 for Lot 3 during this period.

Summary

1. A comparison of wheat alone, wheat and a protein, mineral and vitamin supplemental mixture and barley and the same supplemental mixture, was conducted at the Williston Branch Station.

2. The pigs receiving wheat alone developed symptoms of severe vitamin A deficiency in about eight weeks from the start of the trial. A vitamin A concentrate was added to the wheat, to prevent loss of the pigs.

3. The pigs which received wheat alone made an average daily gain of 0.3 pound for the first 126 days and required 651 pounds of wheat for each 100

pounds of gain. These pigs were not only small but unthrifty in appearance. Pigs which received wheat and supplement gained an average of 0.83 pounds daily and required 353 pounds of feed to produce 100 pounds gain, during the first 126 days of the trial.

4. After the first 126 days, the supplementary mixture was added to the wheat for the pigs in Lot 1. The condition of these pigs immediately improved and their gains were good for the remainder of the trial.

5. The pigs in Lot 1 lost money, while those in Lot 2 made about \$1.77 per pig and Lot 3 made about \$1.90 per pig, over all costs included in feeding the pigs.