Swine

The Value of Soaking Whole Sorghum Grain for Finishing Fall Pigs in Drylot (Project 110).

C. E. Aubel

Two lots of pigs were self-fed, free choice, whole sorghum grain and a mixed protein supplement. Each lot contained 10 pigs. In one lot, the whole sorghum grain was fed dry; in the other, it was automatically fed into water warmed enough to prevent freezing.

The protein supplement fed both lots consisted of 4 parts tankage, 4 parts soybean meal, 1 part cottonseed meal, and 1 part alfalfa meal. To each ton of supplement was added 27 pounds of antibiotic Aurofac[1] (Aureomycin) and one half pound of zinc oxide.

The results are listed in Table 26.

Table 26

Feeding whole sorghum grain dry and soaked for finishing fall pigs in drylot.[1]

December 17, 1960, to March 18, 1961—91 days.

Item	Soaked whole grain sorghum	Whole dry sorghum grain
Lot number	1	2
Number pigs in lot	10	10
Av. initial wt. per pig, lbs.	48.50	49.70
Av. final wt. per pig, lbs.	178.60	178.90
Av. total gain per pig, lbs.	130.10	129.20
Av. daily gain per pig, lbs.	1.42	1.41
Av. daily ration per pig, lbs.:		
Sorghum grain	4.84	4.75
Protein supplement	.75	.71
Lbs. feed per cwt. gain per pig:		
Sorghum grain	339.20	334.75
Protein supplement	53.03	50.69

1. Both lots received the same protein supplement.

Observations

From these results it is concluded there was no advantage in soaking sorghum grain for pigs. Gains and feed efficiency were very much the same.

The Effect of Various Milling Processes on Sorghum Grain When Used for Finishing Fall Pigs in Drylot (Project 110-2).

C. E. Aubel

Grain sorghums are being grown extensively in many parts of the High Plains. Sorghum grain previously has given excellent results compared with corn in feeding tests with swine at this station.

New ways of processing grain may improve the efficiency of the grains for feeding and thus provide more profit in hog raising.

1. Registered trademark American Cyanamid Company for Aureomycin.

Table 27

The comparative value of sorghum grain prepared by different milling processes for finishing fall pigs in drylot.[1]

December 17, 1960, to March 18, 1961—91 days.

Item	RATION FED: Sorghum grain: Whole	Steam rolled	Fine ground	Fine ground, pelleted	Dry rolled	Steam rolled, delayed crimp
Lot number	1	2	3	4	5	6
Number pigs per lot	10	10	10	9	10	10
Av. initial wt. per pig, lbs.	49.70	47.30	48.30	49.30	48.70	48.10
Av. final wt. per pig, lbs.	178.90	185.50	184.50	171.11	164.50	183.50
Av. total gain per pig, lbs.	129.20	138.20	136.20	121.81	115.80	135.40
Av. daily gain per pig, lbs.	1.41	1.51	1.49	1.33	1.26	1.48
Av. daily ration per pig, lbs.:						
Sorghum grain	4.75	4.63	4.41	3.52	3.84	4.74*
Protein supplement	.71	.75	.73	.71	.74	.79
Lbs. feed per cwt. gain per pig:						
Sorghum grain	334.75	305.35	295.15	292.80	301.38	319.05
Protein supplement	50.69	49.92	39.19	59.29	58.72	53.17

1. All lots received the same protein mix supplement.

* In addition to the figures given, the pigs in lot 2 rooted out of their feeder and wasted an estimated 300 pounds of steam rolled sorghum grain. The pigs in lot 6 rooted out an estimated 2,300 pounds of steam rolled, delayed crimp sorghum grain.

Six lots were self-fed, free choice, in drylot. All lots received a mixed animal and plant protein supplement of 4 parts tankage, 4 parts soybean meal, 1 part cottonseed meal, and 1 part alfalfa meal. Each ton of mixed protein supplement also contained 27 pounds of Aurofac[1] and ½ pound of zinc oxide. The ration for each lot varied only in the method of processing.

Lot 1. Whole sorghum grain.
Lot 2. Steam rolled sorghum grain.
Lot 3. Fine ground sorghum grain.
Lot 4. Fine ground and pelleted sorghum grain.
Lot 5. Dry rolled sorghum grain.
Lot 6. Steamed sorghum grain, rolled and crimped four hours later.

The sorghum grain was steamed at 90 pounds pressure and at 180°F. Results are presented in Table 27.

Observations

The pigs in lot 5, which were fed the dry rolled sorghum grain, made the lowest daily gains in this experiment. Those in lot 4 receiving the fine ground pelleted sorghum grain made the next lowest daily gains. Daily ration figures indicate that both lots consumed less feed daily and both had a low feed conversion figure.

Lots 2, 3, and 6 made an excellent showing both in daily gains and in feed conversion. The pigs in lot 6 wasted an estimated 2,300 pounds of steam rolled, delayed crimp sorghum grain. Those in lot 2 wasted about 300 pounds. This is an enormous waste. In processing the feeds in these lots the grain was steamed and put under heat of 180° to 200°F. It is possible this destroyed or changed the food nutrients of these feeds, or made the feed unpalatable. Perhaps enzymes were affected.

A test is now under way to get at the meaning of these wastes. In lot 4, where the grain was pelleted, a poor response was made by the pigs in both daily gains and daily feed consumption (palatability). In pelleting, heat also develops, to about the temperature used in processing the grains for lots 2 and 6.

Effects of Fat and of Pelleting on Utilization of Vitamin A in Pig Feeds (Project 311).

D. B. Parrish and C. E. Aubel

Two tests were made. The first test was to determine effect pelleting feed has on utilization of vitamin A activity supplied by yellow corn. The second test was made on the effect that adding fat has on utilization of vitamin A activity supplied by carotene.

In each test 16 growing pigs were paired by litter, sex, and weight; divided into two test groups; and fed two pigs per pen. The pigs were started at 25-40 pounds each and continued on experiment until the average gain was about 145 pounds. The pigs were from gilts fed limited quantities of vitamin A during gestation. No vitamin A was added to the feed of either mother or pigs during nursing or during feeding before the pigs went on experiment.

In Test 1 a good growing ration was used in which vitamin A activity was supplied by new-crop yellow corn at a level of approximately 400 units per pound of feed. The feed for both groups was the same, except that fed one group was pelleted. Level of feeding to pigs of each pen was limited to the intake of the lowest of the paired-pen groups.

In Test 2 the feed contained 500 units vitamin A activity, supplied by high-quality alfalfa meal. Feed for one group contained 5% added stabilized animal fat, but both feeds were made approximately the same in energy, protein, calcium, and phosphorus by using beet pulp and adjusting quantities of grains and protein sources. Both feeds were pelleted and given free choice.

In these tests vitamin A activity was calculated as follows: 1 microgram of carotene was equivalent to 1.6 units of vitamin A activity and 1 microgram cryptoxanthin to 0.8 unit. Thus, on a weight basis, vitamin A activity was about 30% of the N.R.C. requirement in Test 1 and 40% of it in Test 2.

Results of the two tests are in Table 28.

Observations

Pelleting feed containing yellow corn as the vitamin A source had little effect on average gain or on utilization of vitamin A, as judged by serum vitamin A levels, but feed conversion was improved somewhat.

Addition of 5% fat to the diet had little effect on gains (if weight of the ill pig is eliminated), but feed conversion was improved, and utilization of vitamin A, as judged by serum vitamin A levels, was affected adversely.

Although only low levels of vitamin A were fed, pigs grew well, gaining about 1.5 pounds per day in Test 1 and 1.3 pounds per day in Test 2. Small quantities of vitamin A were found in the blood serum of all groups of pigs, and pigs appeared normal, except for the one that was ill during the early part of the test.

Table 28
Effects of fat and of pelleting on utilization of vitamin A in pig feeds.

Ration	No. pigs	Days on test	Av. wt. start, lbs.	Av. wt. finish, lbs.	Gain, lbs.	Feed conversion ratio	Serum vitamin A, units/100 ml. Start	Finish
				Test 1				
Mash	8	95	39	181	142	3.70	12.6	23.3
Pellets	8	95	39	186	147	3.55	15.4	25.3
				Test 2				
Normal	8	108	31	165*	134	3.20	13.6	24.9
5% fat	8	108	31	177	146	3.05	13.6	17.7

* One pig ill first month with respiratory condition; average weight 174 pounds with this pig's weight eliminated.

Kansas Swine Improvement Association Testing Station

The Kansas Swine Testing Station, in its third year of operation, continues to function under supervision of the animal husbandry department staff. All expenses involved in testing are paid by breeders or producers who have pigs on test.

Production data on boars and barrows are collected while the animals are growing from 60 to 200 pounds body weight. All animals receive the same pelleted ration during the growing period. Boars meeting station requirements are auctioned in March or August. Barrows are slaughtered in the meats laboratory of the Animal Industries building where carcass information is collected.

Table 29 summarizes data collected during the 1960 summer test and the 1960-61 winter test. The basic ration, fed until the boars weigh 200 pounds and come off test, is listed in Table 30. They are then fed a 15% alfalfa ration until sale time. The barrows are taken off test at approximately 210 pounds body weight and shrunk over night before slaughter.

For further information about the swine testing program contact your county agent, the Kansas Swine Improvement Association, the Extension Service, or the Department of Animal Husbandry.

1. Registered trademark American Cyanamid Company for Aureomycin.