

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 Aurofac¹ 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).

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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 micro-

1. Registered trademark American Cyanamid Company for Aureomycin.

gram 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.